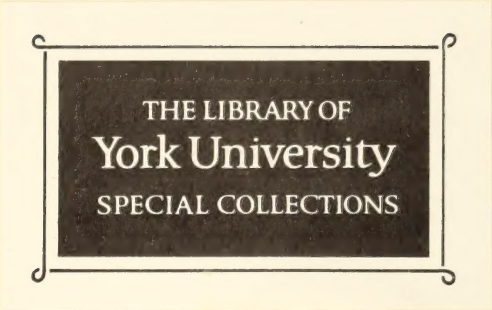


*CANADIAN EDITION*

ST. LAWRENCE PILOT  
(BELOW QUEBEC)

FOURTH EDITION 1926





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# ST. LAWRENCE RIVER PILOT

(CANADIAN EDITION)

## BELOW QUEBEC

COMPRISING

## SAILING DIRECTIONS

From Cap Des Rosiers (South Shore) and Seven  
Islands (North Shore) to Quebec

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4th EDITION

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Published by the Hydrographic Office under the order of  
The Hon. the Minister of the Department of Marine and Fisheries of Canada  
Ottawa, 1926

OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1926







## ADVERTISEMENT

The following directions written or collected, and re-arranged by the late Commander I. B. Miles, R.N., and brought up to date by his successor, Mr. Charles Savary, assisted by Mr. F. C. G. Smith, under the authority of the Government of the Dominion of Canada, form the fourth edition of the Canadian Pilot for the district between Quebec and cap des Rosiers. They should be used in continuation of the Admiralty edition of the St. Lawrence River Pilot on entering the district to which they refer.

The directions between Father point, and pte. aux Orignaux are compiled from notes made by Commander Miles and brought up to date in this edition from recent information.

The information for the Saguenay river is taken entirely from the Admiralty edition of the Pilot, except for the portion of the river between St. Fulgence and Chicoutimi.

For that part of the St. Lawrence between pte. aux Orignaux and Quebec a considerable portion is taken from the same source, corrected and revised according to the most recent information.

The remarks on tides are based on observations made during the progress of the various surveys and from information supplied by Dr. Dawson, Superintendent of Tidal Surveys. The "Tide Tables" published annually by the Hydrographic Survey, Department of Marine and Fisheries, should be consulted.

Detailed description of the lighthouses and lightbuoys is contained in the current light lists published by the Department of Marine and Fisheries.

Tide Tables and Lists of Lights are issued free of charge on application to the various agents of the department, ~~who will also issue these Directions free of charge to bona fide masters of vessels.~~

Seamen are invited to transmit to this department any errors or omissions they may notice in this work, and also any additional information they may consider useful to their fellow seamen.

This work embodies all "Notices to Mariners" referring to the district up to and including No. 1 of 1926.

Capt. F. Anderson,  
Hydrographer.

DEPARTMENT OF MARINE AND FISHERIES,  
Ottawa,



## TABLE OF POINTS AND DEGREES

Points	° ' /	Points	° ' /	Points	° ' /
North.....	0 0	N.N.E. $\frac{1}{4}$ E.....	30 56	N.E. by E. $\frac{1}{2}$ E..	61 52
N. $\frac{1}{8}$ E.....	1 24	N.N.E. $\frac{1}{2}$ E.....	32 20	N.E. by E. $\frac{5}{8}$ E..	63 17
N. $\frac{1}{4}$ E.....	2 49	N.E. by N....	33 45	N.E. by E. $\frac{3}{4}$ E..	64 41
N. $\frac{3}{8}$ E.....	4 13	N.E. $\frac{1}{2}$ N.....	35 09	N.E. by E. $\frac{7}{8}$ E..	66 05
N. $\frac{1}{2}$ E.....	5 37	N.E. $\frac{1}{4}$ N.....	36 34	E.N.E.....	67 30
N. $\frac{5}{8}$ E.....	7 02	N.E. $\frac{3}{8}$ N.....	37 58	E. by N. $\frac{3}{8}$ N....	68 54
N. $\frac{3}{4}$ E.....	8 26	N.E. $\frac{1}{2}$ N.....	39 22	E. by N. $\frac{1}{4}$ N....	70 19
N. $\frac{7}{8}$ E.....	9 50	N.E. $\frac{3}{4}$ N.....	40 47	E. by N. $\frac{3}{8}$ N....	71 43
N. by E.....	11 15	N.E. $\frac{1}{4}$ N.....	42 11	E. by N. $\frac{1}{2}$ N....	73 07
N. by E. $\frac{1}{8}$ E....	12 39	N.E. $\frac{1}{8}$ N.....	43 35	E. by N. $\frac{1}{8}$ N....	74 32
N. by E. $\frac{1}{4}$ E....	14 04	N.E.....	45 00	E. by N. $\frac{1}{4}$ N....	75 56
N. by E. $\frac{3}{8}$ E....	15 28	N.E. $\frac{1}{8}$ E.....	46 24	E. by N. $\frac{3}{8}$ N....	77 20
N. by E. $\frac{1}{2}$ E....	16 52	N.E. $\frac{1}{4}$ E.....	47 49	E. by N.....	78 45
N. by E. $\frac{5}{8}$ E....	18 17	N.E. $\frac{3}{8}$ E.....	49 13	E. $\frac{1}{8}$ N.....	80 09
N. by E. $\frac{3}{4}$ E....	19 41	N.E. $\frac{1}{2}$ E.....	50 37	E. $\frac{1}{4}$ N.....	81 34
N. by E. $\frac{7}{8}$ E....	21 05	N.E. $\frac{5}{8}$ E.....	52 02	E. $\frac{3}{8}$ N.....	82 58
N.N.E.....	22 30	N.E. $\frac{3}{4}$ E.....	53 26	E. $\frac{1}{2}$ N.....	84 22
N.N.E. $\frac{1}{8}$ E.....	23 55	N.E. $\frac{7}{8}$ E.....	54 50	E. $\frac{3}{4}$ N.....	85 47
N.N.E. $\frac{1}{4}$ E.....	25 19	N.E. by E.....	56 15	E. $\frac{1}{4}$ N.....	87 11
N.N.E. $\frac{3}{8}$ E.....	26 43	N.E. by E. $\frac{1}{8}$ E..	57 39	E. $\frac{1}{8}$ N.....	88 35
N.N.E. $\frac{1}{2}$ E.....	28 07	N.E. by E. $\frac{1}{4}$ E..	59 04	East.....	90 00
N.N.E. $\frac{3}{4}$ E.....	29 32	N.E. by E. $\frac{3}{8}$ E..	60 29		

Similarly with the other quadrants.



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## NOTES CONCERNING CHARTS, LISTS OF LIGHTS, SAILING DIRECTIONS, AND ON SUBJECTS OF GENERAL INTEREST TO SEAMEN.

In the following notes acknowledgment of indebtedness must be made to the Admiralty edition of the St. Lawrence Pilot; 1916, Vol. 1.; the Manual of Seamanship for the Royal Navy, and the publications of the United States Life Saving Society.

A great amount of matter has been transcribed almost bodily from the above authorities, slight alterations only having been made to render them applicable to conditions that prevail in the mercantile marine.

For remarks on weather, ice, and conditions generally prevailing in the Lower St. Lawrence, the reader is referred to the opening pages of the above mentioned edition of the St. Lawrence Pilot.

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There are three descriptions of publications used as guides to navigation—the Charts, the Sailing Directions, and the Light Lists—which are all affected by the continual changes and alterations that take place.

Of these the Charts should always be, so far as our knowledge permits, absolutely correct to date; and the Light Lists should be noted for the recent alterations, though space will not permit of full details being always inserted. The Sailing Directions however, cannot, from their nature, be so corrected, and, *in all cases where they differ from charts of later date, the latter must be taken as the guide.*

All small but important corrections that can be made by hand are notified by Notices to Mariners, and masters should at once place them on the charts to which they refer.

Large corrections that cannot be conveniently thus made, are put upon engraved plates, and a new edition of the chart issued.

It must be remembered by masters that the courts will accept no excuse for using uncorrected charts. It is the duty of the master of a vessel to correct his chart to the latest Notice to Mariners that it is in his power to obtain.



Charts should always be purchased from an accredited agent and a certificate obtained that they are corrected to date.

The dates to which large corrections have been made are noted on the charts in the middle of the lower edge, those of the smaller corrections at the lower left-hand corners.

In any communication with Hydrographic Offices concerning charts, dates of corrections should in all cases be given, as well as the number of the chart (which will be found in the *lower right-hand corner*), that the edition referred to may be known.

The **Canadian Lists of Lights and Fog Signals** are published annually, about the 1st April of each year. Alterations that take place after issue are notified to the public, and such alterations should be immediately noted in lists and on charts.

The Lists of Lights should always be consulted as to the details of a light, as the description in the *Sailing Directions* or on the chart may be obsolete, in consequence of changes made since publication.

The **Sailing Directions** are not corrected between issues, except occasionally for very important new rocks or dangers. "Notices to Mariners" referring to each volume are published from time to time.

When "Notices to Mariners" have accumulated since the last revision of the "Sailing Directions," a supplement may be issued. This supplement will contain all notices issued and notes as to cancellation of certain portions of the edition of *Sailing Directions* to which they refer.

Whenever Charts, *Sailing Directions* or Lists of Lights are corrected by hand, a note to that effect should be written on margin with date and authority for the correction.

### **The use of Charts as Navigational Aids, and General Remarks Relating to Practical Navigation.**

1. *Accuracy of a Chart.*—The value of a chart must manifestly depend upon the accuracy of the survey on which it is based, and this becomes more important the larger is the scale of the chart.

To estimate this, the date of the survey, which is always given in the title, is a good guide. Besides the changes that, in



waters where sand or mud prevails, may have taken place since the date of the survey, the earlier surveys were mostly made under circumstances that precluded great accuracy of detail, and, until a plan founded on such a survey is tested, it should be regarded with caution. It may, indeed, be said that, except in well-frequented harbours and their approaches, no surveys yet made have been so minute in their examination of the bottom as to make it certain that all dangers have been found. The fullness or scantiness of soundings is another method of estimating the completeness of a chart. When the soundings are sparse or unevenly distributed, it may be taken for granted that the survey was not made in great detail.

Blank spaces and irregular gaps among soundings on older charts mean that no soundings have been obtained in these spots. When the surrounding soundings are deep it may with fairness be assumed that in the blanks the water is also deep; but when they are shallow, or it can be seen from the rest of the chart that reefs or banks are present, such blanks should be regarded with suspicion. This is especially the case off rocky coasts, and it should be remembered that in waters where rocks abound it is always possible that a survey, however complete and detailed, may have failed to find every small patch.

A wide berth should therefore be given to every rocky shore or patch, and *this rule should be invariably followed, viz., that instead of considering a coast to be clear unless it is shown to be foul, the contrary should be assumed.*

**2. Fathom Lines, a Caution.**—Except in plans of harbours that have been surveyed in detail, the five-fathom line on most charts is to be considered as a caution or danger line against unnecessarily approaching the shore or bank within that line, on account of the possibility of the existence of undiscovered inequalities of the bottom, which nothing but an elaborate detailed survey could reveal. In general surveys of coasts or of little frequented anchorages, the necessities of navigation do not demand the great expenditure of time required for such a detailed survey. It is not contemplated that ships will approach the shores in such localities without taking special precautions.

The ten-fathom line is, on rocky shores, another warning, especially for ships of heavy draught.



Charts where no fathom lines are marked must be especially regarded with caution, as it generally means that soundings were too scanty and the bottom too uneven to enable them to be drawn with accuracy.

Isolated soundings, shoaler than surrounding depths, should always be avoided, especially if ringed round, as there is no knowing how closely the spot may have been examined.

3. *Chart on largest scale always to be used.*—It sometimes happens that, from press of work, only the copper plate of the larger scale chart of a particular locality can at once receive any extensive re-arrangement of coast-line or soundings. This is an additional reason, besides the obvious one of the greater detail shown on such chart, why largest scale charts should always be used for navigation.

4. *Caution in using Small Scale Charts.*—In approaching the land or dangerous banks, regard must always be had to the scale of the chart used. A small error in laying down a position means only yards on a large scale, whereas on a small scale the same amount of displacement means large fractions of a mile. This is particularly to be observed when coming to an anchor on a narrow edge of convenient depth at some distance from the shore.

For the same reason, bearings to objects *near* should be used in preference to objects farther off, although the latter may be more prominent, as a small error in a bearing or in laying it down on the chart has a greater effect in misplacing the position the longer the line to be drawn.

5. *Buoys.*—It is manifestly impossible that any reliance can be placed on buoys always maintaining their exact positions. Buoys should therefore be regarded as warnings and not as infallible navigation marks, especially when in exposed positions; and a ship should always, when possible, be navigated by bearings or angles on fixed objects on shore and not by buoys.

*Light-buoys.*—The lights shown by light-buoys cannot be implicitly relied on, as, if occulting, the apparatus may get out of order, or the light may be altogether extinguished.



6. *Lights*.—Circles drawn on charts around a light are not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights which do not show equally in all directions, the bearings between which the variation, or visibility, or obscuration of the light occurs.

All the distances given in the Lists of Lights and on the charts for the visibility of lights are calculated for a height of an observer's eye of 15 feet. The table of distances visible due to height, at the beginning of each List of Lights affords a means of ascertaining how much more or less the light is visible should the height of the observer's eye be more or less than 15 feet. The glare of a powerful light is often seen beyond the limit of visibility of the actual rays of the light, but this must not be confounded with the true range. Again, refraction may often cause a light to be seen farther than under ordinary circumstances.

When looking out for a light at night, the fact is often forgotten that from aloft the range of vision is much increased. By noting a star immediately over the light a very correct bearing may be afterwards obtained from the standard compass.

The intrinsic power of a light should always be considered when expecting to make it in thick weather. A weak light is easily obscured by haze, and no dependence can be placed on its being seen.

Coloured lights are also inferior in power to bright or white lights, and are more quickly lost under unfavourable circumstances. In some conditions of the atmosphere, white lights may have a reddish hue. The mariner should not trust solely to colour where there are sectors, but verify the position by taking a bearing on the light. On either side of the line of demarcation, between white and red, and also between white and green, there is always a small arc of uncertain colour.

The power of a light can be estimated by remarking its order, as given in the Lists of Lights, and in some cases by noting how much its visibility in clear weather falls short of the range due to the height at which it is placed. Thus, a light standing 200 feet above the sea, and only recorded as visible at 10 miles in clear weather, is manifestly of little



brilliancy, as its height would permit it to be seen over 20 miles, if of any power. (See table in List of Lights before mentioned.)

The distance from a light cannot be estimated either by its brilliancy or its dimness.

7. *Fog Signals*.—Sound is conveyed in a very capricious way through the atmosphere. Apart from wind, large areas of silence have been found in different directions and at different distances from the fog signal station, in some instances even when in close proximity to it. The apparatus, moreover, for sounding the signal often requires some time before it is in readiness to act. A fog often creeps imperceptibly towards the land, and is not observed by the people at a station until it is upon them; whereas a ship may have been for many hours in it, and approaching the land. In such a case no signal may be made. When sound has to travel against the wind, it may be thrown upwards; in such a case, a man aloft might hear it when it is inaudible on deck. Under certain conditions of the atmosphere, when a fog signal is a combination of high and low notes, one of the notes may be inaudible.

The mariner should not assume—

- a. That he is out of hearing distance, because he fails to hear the sound.
- b. That because he hears a fog signal faintly, that he is at a great distance from it.
- c. That he is near it, because he hears the sound plainly.
- d. That the distance from and the intensity of the sound on any one occasion, is a guide to him for any future occasion.
- e. That the fog signal has ceased sounding, because he does not hear it even when in close proximity.

*Submarine fog bells*.—These very efficient aids to navigation are being installed in increasing numbers in off-shore positions, such as are marked by light-vessels and buoys. The sound of a submarine bell is frequently heard at a much greater distance than that of a fog-horn of the vessel to which it is attached; and provided the bottom is fairly even with no inter-



vening shoal banks between the observer and the place where the bell is installed the sound will be picked up at least as soon as the fog-horn. Vessels fitted with apparatus for receiving submarine signals can be headed directly for the bell by noting the relative distinctiveness with which the sound can be heard on either bow. Should a vessel not be fitted with the receivers the sound can sometimes be picked up from a position below the water line and close to the vessel's side—the engines of course being stopped.

Experiment in the St. Lawrence showed that the sound of a bell was carried with the current to a great distance. With adverse or cross currents the distance at which the sound was heard was considerably reduced and a shoal bank between the observer and the bell was found to deflect the sound in the direction of the flow of the current past the bank.

8. *Tides and Tidal Streams*.—In navigating coasts where the tidal range is considerable, caution is always necessary. It should be remembered that there are indraughts to all bays and bights, although the general run of the stream may be parallel to the shore.

The turn of the tidal stream off-shore is seldom coincident with the time of high and low water on shore. In open channels, the tidal stream ordinarily overruns the turn of the vertical movement of the tide by about three hours, forming what is usually known as tide and half tide, the effect of which is that at high and low water by the shore the stream is running its greatest velocity.

On coasts where there is much diurnal inequality in the tides, the amount of rise and fall can never be depended upon, and additional caution is necessary.

It should also be remembered that at times the tide falls below the level of low-water ordinary springs. Wind or a high barometer may cause this at any time, and the amount varies with locality. When the moon's perigee coincides with the full or new moon the same effect is often produced.

9. *Arrows* on charts only show the most usual or the mean direction of a tidal stream or current. It must never be assumed that the direction of a stream will not vary from that



indicated by the arrow. In the same manner, the rate of a stream constantly varies with circumstances, and the rate given on the chart is merely the mean of those found during the survey, possibly from very few observations.

**10. Fixing Position.**—The most accurate method of fixing a position relative to the shore is by angles taken by the sextant between well-defined objects and laid down on the chart by station pointer.

Three things are, however, necessary to its successful employment. First, that the objects be well chosen; second, that the observer is skilful and rapid in his use of the sextant, and third, that the chart being used is from an accurate survey.

For the first, reference can be had to the pamphlet on the use of the station-pointer, which is sold with every instrument, the second can only be obtained by practice. The third can be judged by the data in the title.

In many narrow waters also, where the objects may yet be at some distance, as in coral harbours or narrow passages among mud banks, navigation by sextant and station-pointer is invaluable, as a true position can only be obtained by their means. A small error in either taking or plotting a compass bearing under such circumstances may put the ship ashore.

It is not intended that the use of the compass to fix the ship should be given up; there are many circumstances in which it may be usefully employed, but errors more readily creep into a position so fixed. Angles should invariably be used in all cases where great accuracy of position is desired, such as the fixing of a rock or shoal, or of additions to a chart, such as fresh soundings or new buildings. In these cases angles should be taken to several objects, the more the better; but five objects is a good number, as the four angles thus obtained not only prevent any errors, but they at once furnish a means of checking the accuracy of the chart itself.

Sometimes, when only two objects are visible, a compass bearing and sextant angle may be used with advantage.

The use of a danger angle in passing outlying rocks with land behind should not be forgotten. In employing this method,



however, caution is necessary, as should the chart be not accurate *i.e.*, should the objects selected be not quite correctly placed, the angle taken off from it may not serve the purpose. It should not, therefore, be employed when the survey is old or manifestly imperfect.

In fixing by the compass, it must always be remembered that two bearings only are liable to error. An absolute error may be made in either bearing observed; errors may be made in applying the deviation; or errors may creep in in laying them on to the chart. For these reasons, a third or check bearing of some other object should be taken, especially when near the shore or dangers. The coincidence of these three lines will prevent any mistakes.

In passing near a point of land, or an island or any conspicuous object the method of fixing by doubling the angle on the bow is invaluable. The ordinary form of it, the so-called "four-point bearing," when the bearing is taken four points on the bow, and on the beam, the distance from the object at the latter position being the distance run between the times of taking the bearings, gives an excellent fix for a departure, but does not ensure safety, as the point, and probably the rocks off it, are abeam before the position is obtained.

By taking the bearings of an object when two and four points, three and six points, or any doubled angle on the bow, and the distance made good in the interval, a very good position is obtained at the time of the second bearing,—the distance from the object being, as with the "four-point bearing," equal to the distance run. This method has an advantage over those following, in that no tables are necessary for the working out of the distance off at second bearing. Used in conjunction with the Traverse table the distance the ship will pass off the object when abeam can be obtained, as follows.

Taking the degrees, or points, from bow at second bearing as a course, with the distance made good in distance column, in dep. column will be found the distance the ship will pass off when abeam—provided the course is maintained.

The advantage of having this knowledge before coming up to a point is obvious.



Another method of obtaining the distance the ship will pass off an object is shown in the following table:

Angles on bow.	Between 22° and 34°				The distance made good will be distance ship will pass off.
	"	25°	"	41°	
	"	26½°	"	45°	
	"	32°	"	59°	
	"	37°	"	72°	
	"	45°	"	90°	
	"	45°	"	63½°	the distance made good will be half the distance she will pass off.

A very useful table is here inserted. If two bearings of an object are taken and the distance run in the interval between the two bearings (allowance being made for tide, etc.) is known, this distance, multiplied by the factors in the table, will give the distance the ship is off at the second bearing, and will also give the distance the ship will pass when at her nearest, i.e., when abeam. This table can, of course, also be used to obtain distance from an object abaft the beam and so distance when object was abeam.

*Example.*—Course, North. Speed, 10 knots.

9.00 p.m. observed Tonken Lt. bearing N.N.E. patent log 18.0.

9.30 p.m. observed Tonken Lt. bearing N.E. by E.½E. patent log 23.0.

Difference between course and first bearing is 2 points.

Difference between course and second bearing is 5½ points.

Distance run in the interval, 5 miles.

Under 2 (difference between course and first bearing) and in line with 5½ (difference between course and second bearing) will be seen the factors .60 and .53. Multiply these factors by distance run.

.6 x 5 = 3.0 m. distance from lighthouse at 2nd bearing.

.53 x 5 = 2.65 m. distance ship will pass off lighthouse when abeam *provided the course is maintained.*

It must be remembered that distance run, is distance *made good*, and the course must be the same throughout.

When the object is abeam the vessel is at her nearest, therefore the smaller of the two results always gives the distance off the ship will be, or was, when abeam.



**DISTANCE OF AN OBJECT BY TWO BEARINGS, AND DISTANCE RUN  
BETWEEN THEM.**

Difference in points between course and second bearing.	Difference in points between the course and first bearing.											
	2		2½		3		3½		4		4½	
3.....	1.96	1.09										
3½.....	1.32	.84	2.42	1.53								
4.....	1.00	.71	1.62	1.15	2.85	2.01						
4½.....	.81	.63	1.23	.95	1.91	1.48	3.25	2.51				
5.....	.69	.57	1.00	.83	1.45	1.21	2.19	1.82	3.62	3.01		
5½.....	.60	.53	.85	.75	1.18	1.01	1.66	1.46	2.44	2.15	3.96	3.49
6.....	.54	.50	.74	.69	1.00	.92	1.35	1.24	1.85	1.71	2.66	2.46
6½.....	.50	.47	.67	.64	.88	.84	1.14	1.09	1.50	1.44	2.02	1.93
7.....	.46	.45	.61	.60	.79	.77	1.00	.98	1.27	1.25	1.64	1.61
7½.....	.43	.43	.57	.56	.72	.72	.90	.89	1.11	1.11	1.39	1.38
8.....	.41	.41	.53	.53	.67	.67	.82	.82	1.00	1.00	1.22	1.22
8½.....	.40	.40	.51	.51	.63	.63	.76	.76	.91	.91	1.09	1.09
9.....	.39	.38	.49	.48	.60	.59	.72	.71	.85	.83	1.00	.98
9½.....	.38	.37	.48	.46	.58	.56	.69	.66	.83	.77	.93	.89
10.....	.38	.35	.47	.44	.57	.52	.66	.61	.77	.71	.88	.81
10½.....	.38	.34	.47	.42	.56	.49	.65	.57	.74	.65	.84	.74
11.....	.39	.32	.47	.39	.56	.46	.64	.53	.72	.60	.81	.67
11½.....	.40	.31	.48	.37	.56	.43	.63	.49	.71	.55	.79	.61
12.....	.41	.29	.49	.35	.57	.40	.64	.45	.71	.50	.78	.55
	5		5½		6		6½		7		7½	
6.....	4.26	3.94										
6½.....	2.86	2.74	4.52	4.33								
7.....	2.17	2.13	3.04	2.98	4.74	4.64						
7½.....	1.76	1.76	2.30	2.29	3.18	3.17	4.91	4.88				
8.....	1.50	1.50	1.87	1.87	2.41	2.41	3.30	3.30	5.03	5.03		
8½.....	1.31	1.30	1.59	1.58	1.96	1.95	2.50	2.49	3.38	3.36	5.10	5.08
9.....	1.18	1.15	1.39	1.36	1.66	1.63	2.03	1.99	2.56	2.51	3.43	3.36
9½.....	1.08	1.03	1.25	1.19	1.46	1.39	1.72	1.65	2.08	1.99	2.60	2.49
10.....	1.00	.92	1.14	1.05	1.31	1.21	1.51	1.39	1.77	1.63	2.11	1.95
10½.....	.94	.83	1.06	.94	1.20	1.05	1.35	1.19	1.55	1.36	1.79	1.58
11.....	.90	.75	1.00	.83	1.11	.92	1.24	1.03	1.39	1.15	1.57	1.30
11½.....	.87	.67	.95	.73	1.05	.81	1.15	.89	1.27	.98	1.14	1.09
12.....	.85	.60	.92	.65	1.00	.71	1.09	.77	1.18	.83	1.29	.91
	8		8½		9		9½		10		10½	
9.....	5.13	5.03										
9½.....	3.44	3.30	5.10	4.88								
10.....	2.61	2.41	3.43	3.17	5.03	4.64						
10½.....	2.12	1.87	2.60	2.29	3.38	2.98	4.91	4.33				
11.....	1.80	1.56	2.11	1.76	2.56	2.13	3.30	2.74	4.74	3.94		
11½.....	1.58	1.22	1.79	1.38	2.08	1.61	2.50	1.93	3.18	2.46	4.52	3.49
12.....	1.41	1.00	1.57	1.11	1.77	1.25	2.03	1.44	2.41	1.71	3.04	2.15



11. *Change of Variation of the Compass.*—The gradual change in the variation must not be forgotten in laying down positions by bearing on charts. The magnetic compasses placed on the charts for the purpose of facilitating plotting become in time slightly in error, and in some cases, such as with small scales, or when the lines are long, the displacement of position from neglect of this change may be of importance. The compasses are re-engraved when the error amounts to a quarter of a point, but the chart plates cannot be corrected more frequently from the impossibility of making alterations too often on one spot in a copper plate.

The geographical change in the variation is very rapid in some parts of the world, and should always be taken in consideration. For instance, in approaching Halifax from Newfoundland the variation changes  $10^{\circ}$  in less than 500 miles.

Therefore when the true course between two positions crosses differing lines of variation the compass course must be altered from time to time to allow for the changes due not only to time but to locality.

A variation chart should be consulted on this head and the date and correction to apply to variation (always given in compass roses or in title) be watched.

CAUTION.—Mariners are warned to guard against the effect of the retained magnetism in ship, due to last course. Even in swinging ship this error is found and it can be readily understood that after steaming or laying with the ship's head in one direction for some time, the result of retained magnetism (see Lecky's "*Wrinkles in Practical Navigation*") is strongly felt. In steaming the constant vibration from the engines settles this induced magnetism and therefore the effect is felt longer after change of course. The *amount* of error due to this cause can only be found by observation, but it is always to be expected on change of course, and always tends to throw the ship in direction of last course. In instructions for adjustment of Kelvin Compass the following practical rule and caution is given:—

Sec. 7. Warning regarding the sluggishness of Ship's Magnetism.



1. After steering for some time on Westerly courses expect;
  - a. Westerly error if you turn to the north.
  - b. Easterly error if you turn to the south.
2. After steering for some time on Easterly courses, expect;
  - a. Easterly error if you turn to the north.
  - b. Westerly error if you turn to the south.

Lecky gives interesting examples of this and some valuable hints for dealing with error caused by retained magnetism.

Steaming at full speed on the reverse course for a short time undoubtedly gets rid of a great portion of this retained magnetism. This caution emphasizes the fact that observations for error should be taken as frequently as possible and—*look ahead*, not only to the course being steered, but to the course about to be steered and to the possibility of thick weather preventing observations.

*Local Magnetic Disturbance of the Compass on board Ship;—* The term “local magnetic disturbance” has reference only to the effects on the compass of magnetic masses external to the ship in which it is placed. Observation shows that disturbance of the compass in a ship afloat is experienced only in a few places on the globe.

Magnetic laws do not permit of the supposition that it is the visible land which causes such disturbance, because the effect of a magnetic force diminishes in such rapid proportion as the distance from it increases, that it would require a local centre of magnetic force of an amount absolutely unknown to affect a compass half a mile distant.

Such deflections of the compass are due to magnetic minerals in the bed of the sea under the ship, and when the water is shallow, and the force strong, the compass may be temporarily deflected when passing over such a spot, but the area of disturbance will be small, unless there are many centres near together.

It is very desirable that whenever a ship passes over an area of local magnetic disturbance, the position should be fixed, and the facts reported as far as they can be ascertained.



12. *Use of Oil for Modifying the Effect of Breaking Waves;*—Many experiences of late years have shown that the utility of oil for this purpose is undoubted, and the application simple.

The following may serve for the guidance of seamen, whose attention is called to the fact that a very small quantity of oil, skilfully applied, may prevent much damage both to ships (especially the smaller classes) and to boats, by modifying the action of breaking seas.

The principal facts as to the use of oil are as follows;—

1. On free waves, *i.e.*, waves in deep water, the effect is greatest.

2. In a surf, or waves breaking on a bar, where a mass of liquid is in actual motion in shallow water, the effect of the oil is uncertain; as nothing can prevent the larger waves from breaking under such circumstances; but even here it is of some service.

3. The heaviest and thickest oils are most effectual. Refined kerosene is of little use; crude petroleum is serviceable when nothing else is obtainable; but all animal and vegetable oils, such as waste oil from the engines, have great effect.

4. A small quantity of oil suffices, if applied in such a manner as to spread to windward.

5. It is useful in a ship or boat, both when running, or lying to, or in wearing.

6. No experiences are related of its use when hoisting a boat up in a sea-way at sea, but it is highly probable that much time and injury to the boat would be saved by its application on such occasions.

7. In cold water, the oil being thickened by the lower temperature, and not being able to spread freely, will have its effect much reduced. This will vary with the description of oil used.

8. The best method of application in a ship at sea appears to be: hanging over the side, in such a manner as to be in the water, small canvas bags, capable of holding from one to two gallons of oil, such bags being pricked with a sail needle to facilitate leakage of the oil.



The position of these bags should vary with the circumstances. Running before the wind they should be hung on either bow—*e.g.*, from the cathead—and allowed to tow in the water.

With the wind on the quarter the effect seems to be less than in any other position, as the oil goes astern while the waves come up on the quarter.

Lying to, the weather bow and another position farther aft seem the best places from which to hang the bags, with a sufficient length of line to permit them to draw to windward, while the ship drifts.

9. Crossing a bar with a flood tide, oil poured overboard and allowed to float in ahead of the boat which would follow with a bag towing astern, would appear to be the best plan. As before remarked, under these circumstances the effect cannot be so much trusted.

On a bar with the ebb tide it would seem to be useless to try oil for the purpose of entering.

10. For boarding a wreck, it is recommended to pour oil overboard to windward of her before going alongside. The effect in this case must greatly depend upon the set of the current, and the circumstances of the depth of water.

11. For a boat riding in bad weather from a sea anchor, it is recommended to fasten the bag to an endless line rove through a block on the sea anchor, by which means the oil is diffused well ahead of the boat, and the bag can be readily hauled on board for refilling if necessary.

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### **Notes on Treatment of the Apparently Drowned and on Rescuing Drowning Persons.**

In the following notes two methods of resuscitating apparently drowned persons are described—the Schäfer method and the Howard Sylvester method; of these two the former is the more recent idea and the simpler to a person unaccustomed to the work, and is that taught seamen and boys of the Royal Navy. The Howard Sylvester method is usually practised among the life saving crews of the United States sea-board.



## LIFE SAVING

(As taught by the Royal Life Saving Society.)

Extract from "Manual of Seamanship for the Royal Navy."

In attempting to rescue a drowning person it must be remembered that the rescuer is at an advantage, and if he only retains his presence of mind he should have no difficulty in effecting a rescue. If, however, he should be unacquainted with the proper methods of rescue and release, great caution should be exercised.

The following rules should be observed—special attention being paid to the method of resuscitation.

*Method of Rescue*

There are five practical methods of carrying a person in the water, and those who are ignorant of what to do in cases of emergency can, in the course of ten or twelve lessons, become thoroughly proficient and able to render valuable aid in saving life without risk or danger to themselves. The methods are as follows:—

1. When the drowning person is not struggling take him by the hair and, by a quick twist turn him on his back, and place your hand on either side of his face. Then lie on your back, hold him in front of you, and swim with the back leg stroke, taking care to keep his face above the water.

2. In cases of struggling, which renders the drowning person difficult to manage, turn him on his back as before, and take a firm hold of his arms just above the elbows. Draw his arms upwards at right angles to his body and swim with back stroke. This hold will put the drowning person under the control of the rescuer, and prevent him from turning round, clutching, or even struggling.

3. If the arms be difficult to grasp, slip your hands under the armpits of the drowning person and place them on his chest or round his arms, raise them at right angles to his body, and then lie on your back and swim with the back stroke.

4. To render assistance to a swimmer attacked by cramp, or exhausted, as well as to those in danger of drowning who may be obedient and remain quiet, the person assisted must place his



hands on the rescuer's shoulders close to the neck, with his arms at full stretch, and lie on his back perfectly still, with the head held well back. The rescuer being uppermost, and having arms and legs free, swims with the breast stroke. This is by far the easiest method, and without undue exertion a person can be carried a much longer distance than by any other method.

5. Another method of rescuing a person when passive is to hold him with one arm placed over one of his shoulders or under one of his arms, with your hand under the opposite armpit, or holding him by his clothes, thus leaving your other arm free with which to propel yourself. This method will be useful to overarm swimmers as well as to back-stroke swimmers, for although the rescuer may be partially on his back, he will be able to use either the over-arm or the back-stroke kick. In order that the rescuer shall not be obliged to reverse his stroke, he should make use of his usual over-arm for the purpose of holding the drowning person.

#### METHOD OF RELEASE

The following are the three methods recommended for releasing one's self from the clutch of a drowning person:—

1. If the rescuer be held by the wrists, he must turn both arms simultaneously against the drowning person's thumbs, and bring his arms at right angles to the body, thus dislocating the thumbs of the drowning person if he does not leave go.

2. If clutched round the neck he must take a deep breath and lean well over the drowning person, at the same time place one hand in the small part of his back, raise the other arm in line with the shoulder, and pass it over the drowning person's arm, then pinch the nostrils close with the fingers and at the same time place the palm of the hand on the chin, and push away with all possible force. The holding of the nose will make the drowning person open his mouth for breathing; being under water choking will ensue, and the rescuer will gain complete control.

3. If clutched round the body and arms or round the body only, the rescuer must lean well over the drowning person, take a breath as before, and either withdraw both arms in an upward



direction in front of his body, or act in accordance with the instructions for releasing one's self if held round the neck. In either case place the one hand on his shoulder, and the palm of the other hand against his chin, at the same time bring the knee up against the lower part of his chest, and then by means of a strong and sudden push stretch the arms and leg straight out, throwing the whole weight of the body backwards. This sudden motion will break the clutch and leave the rescuer free.

#### TREATMENT OF APPARENTLY DROWNED

When a person is lifted out of the water in an apparently drowned condition, there must be no loss of time in attempting restoration. The means used to restore life must be carried out with caution, perseverance, and continuous energy, as life has, in many cases, been restored after long hours of unceasing work.

Immediately on removal from the water, and if breathing has ceased, place the patient face downwards on the ground, then, without stopping to remove clothing, commence artificial respiration, *as every instant of delay is serious.*



Fig. 1

Avoid rough usage, especially twisting or bending of limbs, and under no circumstances hold the patient up by the feet.

In all cases send for medical assistance as soon as possible.

In the event of respiration not being entirely suspended when a person is lifted out of the water, it may not be necessary to imitate breathing; in that case he may be placed upon his side



and natural respiration may be assisted by the application of an irritant substance to the nostrils and tickling the nose. Smelling salts, pepper, or snuff may be used.

To effect artificial respiration put yourself astride or on one side of the patient's body, in a kneeling position, facing his head. (See diagram). Placing your hands flat in the small of his back, with the thumbs nearly touching and the fingers spread out on each side of the body over the lowest ribs, lean forward, and steadily allow the weight of your body to fall over upon them, and so produce a firm downward pressure, which must not be violent.

By this means the air (and water, if there be any) is driven out of the patient's lungs. Immediately thereafter swing backward, rapidly releasing the pressure but without lifting the hands from the patient's body. Repeat this forward and backward movement (pressure and relaxation of pressure) every four or five seconds. In other words, sway your body forward and backward upon your hands twelve or fifteen time a minute, without any marked pause between the movements.

By these means an exchange of air is produced in the lungs similar to that effected by natural respiration: every pressure forces air out of the chest, every relaxation of pressure causes it to pass in.

This procedure must be pursued until natural respirations are resumed. If they are resumed and, as sometimes happens, again tend to fail, the process of artificial respiration must be resorted to as before.

Whilst the operator is carrying out artificial respiration, others may, if there be opportunity, busy themselves with applying hot flannels to the limbs and body, and hot bottles to the feet, or promote warmth by friction; but no attempt should be made on the part of the operator to remove the wet clothing or to give any restoratives by the mouth until natural breathing has recommenced.

When natural respiration is once established, cease to imitate the movements of breathing. Then you may turn the patient's face upward and proceed with the treatment for the promotion of warmth and circulation.



Friction over the surface of the body must be resorted to using handkerchiefs, flannels, etc. By these means the blood is propelled along the veins towards the heart.

The friction along the legs, arms, and body should all be towards the heart, and continued after the patient has been wrapped in blankets or some dry clothing.

As soon as possible after breathing has been established, remove the patient to the nearest house, and further promote warmth by the application of hot flannels to the pit of the stomach, and bottles, or bladders of hot water, heated bricks, etc., to the armpits, between the thighs, and the soles of the feet. If there be pain or difficulty in breathing, apply a hot linseed-meal poultice to the chest.

On the restoration of life, a teaspoonful of warm water may be given; and then if the power of swallowing has returned, very small quantities of wine, warm brandy and water, beef-tea, or coffee administered, the patient kept in bed, and a disposition to sleep encouraged.

Watch the patient carefully for some time to see that breathing does not fail.

If the patient has been carried to the house, be careful to let the air circulate freely about the room, and prevent crowding round the patient.

#### RESTORING THE APPARENTLY DROWNED ACCORDING TO THE RULES OF THE UNITED STATES LIFE-SAVING SERVICE

NOTE.—These directions differ from those given in previous Regulations issued to the Life Saving Service by the addition of means for securing deeper inspiration. The method heretofore published, known as the Howard, or Direct Method, has been productive of excellent results and is retained here. It is, however, here arranged for practice in combination with the Sylvester method, the latter producing deeper inspiration than any other known method, while the former effects the most complete expiration. The combination, therefore, tends to produce the most rapid oxygenation of the blood—the real object to be gained. The combination is prepared primarily for the



use of life-saving crews where assistants are at hand. A modification of Rule III, however, is published as a guide in cases where no assistants are at hand and one person is compelled to act alone.

**RULE I.**—Arouse the patient.—Do not move the patient unless in danger of freezing; instantly expose the face to the air, toward the wind if there be any; wipe dry the mouth and nostrils; rip the clothing so as to expose the chest and waist; give two or three quick, smarting slaps on the chest with the open hand.

If the patient does not revive proceed immediately as follows:

**RULE II.** *To expel water from the stomach and chest* (see fig. 2).—Separate the jaws and keep them apart by placing between



Fig. 2

the teeth a cork or small bit of wood; turn the patient on his face, a large bundle of tightly rolled clothing being placed beneath the stomach; press heavily on the back over it for half a minute, or as long as fluids flow freely from the mouth.

**RULE III.** *To produce breathing* (see figs. 3 and 4).—Clear the mouth and throat of mucus by introducing into the throat



the corner of a handkerchief wrapped closely around the forefinger; turn the patient on the back, the roll of clothing being so placed as to raise the pit of the stomach above the level of the rest of the body. Let an assistant with a handkerchief or piece of dry cloth draw the tip of the tongue out of one corner of the mouth (which prevents the tongue from falling back and choking the entrance to the windpipe), and keep it projecting a little beyond the lips. Let another assistant grasp the arms just below the elbows and draw them steadily upward by the sides of the patient's head to the ground, the hands nearly meeting (which enlarges the capacity of the chest and induces inspiration). (Fig. 3.) While this is being done let a third

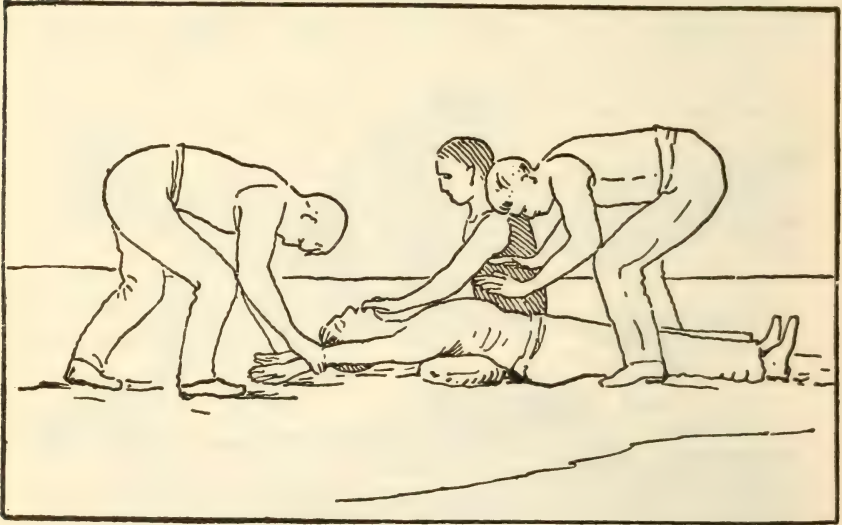


Fig. 3

assistant take position astride the patient's hips with his elbows resting upon his own knees, his hands extended ready for action. Next, let the assistant standing at the head turn down the patient's arms to the sides of the body, the assistant holding the tongue, changing hands if necessary\* to let the arms pass. Just before the patient's hands reach the ground the man astride the body will grasp the body with his hands, the balls of the

\* Changing hands will be found unnecessary after some practice; the tongue, however, must not be released.



thumbs resting on either side of the pit of the stomach, the fingers falling into the grooves between the short ribs. Now, using his knees as a pivot, he will at the moment the patient's hands touch the ground throw (not too suddenly) all his weight forward on his hands, and at the same time squeeze the waist between them as if he wished to force anything in the chest upward out of the mouth; he will deepen the pressure while he slowly counts one, two, three, four (about five seconds), then suddenly let go with a final push, which will spring him back to his first position.† This completes expiration. (Fig. 4).

At the instant of his letting go, the man at the patient's head will again draw the arms steadily upward to the sides of the patient's head as before (the assistant holding the tongue again, changing hands to let the arms pass if necessary), holds them there while he slowly counts one, two, three, four (about five seconds).

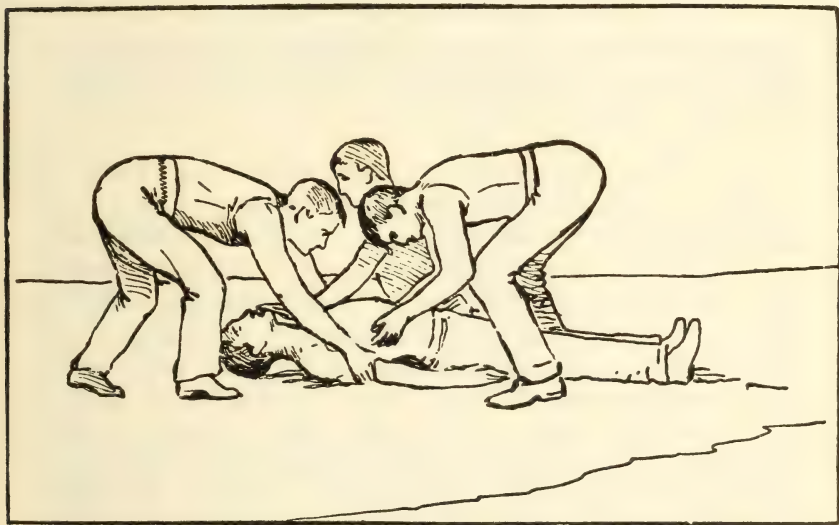


Fig. 4.

Repeat these movements deliberately and perseveringly twelve or fifteen times in every minute—thus imitating the natural motions of breathing.

† A child or very delicate patient must, of course, be more gently handled.



If natural breathing be not restored after a trial of the bellows movement for the space of about four minutes, then turn the patient a second time on the stomach, as directed in Rule II, rolling the body in the opposite direction from that which it was first turned, for the purpose of freeing the air passage from any remaining water. Continue the artificial respiration from one to four hours, or until the patient breathes, according to Rule III; and for a while, after the appearance of returning life, carefully aid the first short gasps until deepened into full breaths. Continue the drying and rubbing, which should have been unceasingly practised from the beginning by assistants, taking care not to interfere with the means employed to produce breathing. Thus the limbs of the patient should be rubbed, always in an upward direction towards the body, with firm-grasping pressure and energy, using the bare hands, dry flannels, or handkerchiefs, and continuing the friction under the blankets or over the dry clothing. The warmth of the body can also be promoted by the application of hot flannels to the stomach and armpits, bottles or bladders of hot water, heated bricks, etc., to the limbs and soles of the feet.

**RULE IV. AFTER-TREATMENT.**—*Externally:* As soon as breathing is established let the patient be stripped of all wet clothing, wrapped in blankets only, put to bed comfortably warm, but with a free circulation of fresh air, and left to perfect rest. *Internally:* Give whisky or brandy and hot water in doses of a teaspoonful to a tablespoonful, according to the weight of the patient, or other stimulant at hand, every ten or fifteen minutes for the first hour, and as often thereafter as may seem expedient. *Later manifestations:* After reaction is fully established, there is great danger of congestion of the lungs, and if perfect rest is not maintained for at least forty-eight hours it sometimes occurs that the patient is seized with great difficulty of breathing, and death is liable to follow unless immediate relief is afforded. In such cases apply a large mustard plaster over the breast. If the patient gasps for breath before the mustard takes effect assist the breathing by carefully repeating the artificial respiration.



## MODIFICATION OF RULE III.

(To be used after Rules I and II in case no assistance is at hand.)

*To produce respiration.*—If no assistance is at hand, and one person must work alone, place the patient on his back with the shoulders slightly raised on a folded article of clothing; draw

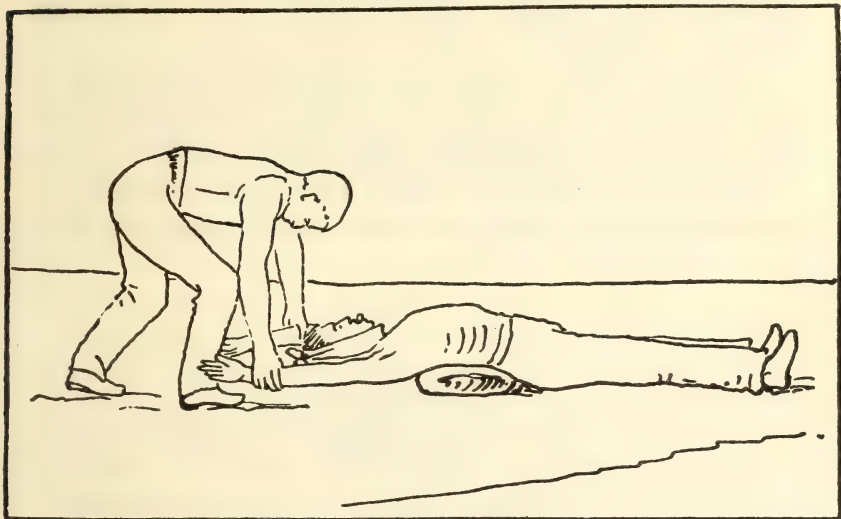


Fig. 5.

forward the tongue and keep it projecting just beyond the lips; if the lower jaw be lifted the teeth may be made to hold the tongue in place; it may be necessary to retain the tongue by passing a handkerchief under the chin and tying it over the head.

Grasp the arms just below the elbows and draw them steadily upward by the sides of the patient's head to the ground, the hands nearly meeting. (See fig. 5.)

Next lower the arms to the sides and press firmly downward and inward on the sides and front of the chest over the lower ribs, drawing toward the patient's head. (See fig. 6.)

Repeat these movements twelve to fifteen times every minute, etc.



*Instructions for saving drowning persons by swimming to their relief.*

When you approach a person drowning in the water assure him, with a loud and firm voice, that he is safe.

Before jumping in to save him, divest yourself as far and as quickly as possible of all clothes; tear them off if necessary; but if there is not time, loose at all events the foot of your drawers, if they are tied, as, if you do not do so, they fill with water and drag you.

On swimming to a person in the sea, if he be struggling, do not seize him then, but keep off for a few seconds till he gets quiet, for it is sheer madness to take hold of a man when he is struggling in the water, and if you do you run a great risk.

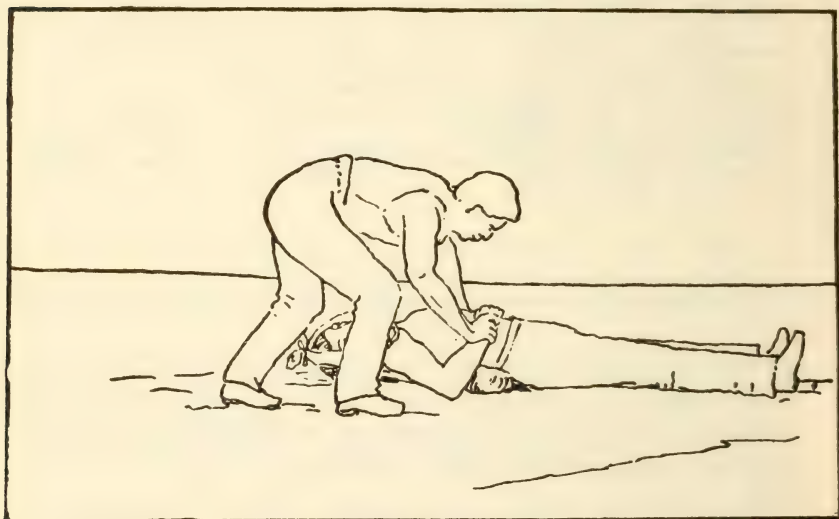


Fig. 6

Then get close to him and take fast hold of the hair of his head, turn him as quickly as possible onto his back, give him a sudden pull, and this will cause him to float, then throw yourself on your back also and swim for the shore, both hands having hold of his hair, you on your back and he also on his, and of course his back to your stomach. In this way you will



get sooner and safer ashore than by any other means, and you can easily thus swim with two or three persons; the writer has even, as an experiment, done it with four, and gone with them 40 or 50 yards in the sea. One great advantage of this method is that it enables you to keep your head up and also to hold the person's head up you are trying to save. It is of primary importance that you take fast hold of the hair and throw both the person and yourself on your backs. After many experiments, it is usually found preferable to all other methods. You can in this manner float nearly as long as you please, or until a boat or other help can be obtained.

It is believed there is no such thing as a *death grasp*; at least it is very unusual to witness it. As soon as a drowning man begins to get feeble and to lose his recollection, he gradually slackens his hold until he quits it altogether. No apprehension need, therefore, be felt on that head when attempting to rescue a drowning person.

After a person has sunk to the bottom, if the water be smooth the exact position where the body lies may be known by the air bubbles which will occasionally rise to the surface, allowance being of course made for the motion of the water, if in a tideway or stream, the current will have carried the bubbles out of a perpendicular course in rising to the surface. Oftentimes a body may be regained from the bottom, before too late for recovery, by diving for it in the direction indicated by these bubbles.

On rescuing a person by diving to the bottom, the hair of the head should be seized by one hand only, and the other used in conjunction with the feet in raising yourself and the drowning person to the surface.

If in the sea, it may sometimes be a great error to try to get to land. If there be a strong "outsetting" tide, and you are swimming either by yourself or having hold of a person who cannot swim, then get on your back and float till help comes. Many a man exhausts himself by stemming the billows for the shore on a back-going tide, and sinks in the effort, when, if he had floated, a boat or other aid might have been obtained.

These instructions apply alike to all circumstances, whether as regards the roughest sea or smooth water.



*Treatment of Frostbites*

(As recommended by the Surgeon-General of Public Health and Marine Hospital Service of the U. S.)

Do not bring the patient to the fire, nor bathe the parts in warm water.

If snow be on the ground, or accessible, take a woollen cloth in the hand, place a handful of snow upon it and gently rub the frozen part until the natural colour is restored. In case snow is not at hand, bathe the part gently with a woollen cloth in the coldest *fresh* water obtainable—ice water if practicable.

In case the frostbite is old, and the skin has turned black or begun to scale off, do not attempt to restore its vitality by friction, but apply carron oil on a little cotton; after which wrap the part loosely in flannel.

In all cases, as soon as the vitality has been restored, apply the carron oil, prepared according to Service formula.\* As it contains opium, do not administer morphia or other opiate.

In the case of a person apparently dead from exposure to cold, friction should be applied to the body and the lower extremities, and artificial respiration practised as in case of the apparently drowned. As soon as the circulation appears to be restored, administer spirits and water at intervals of fifteen or twenty minutes until the flesh feels natural. Even if no signs of life appear, friction should be kept up for a long period, as instances are on record of recovery after several hours of suspended animation.

On the restoration of life, a teaspoonful of warm water may be given; and then if the power of swallowing has returned, very small quantities of wine, warm brandy and water, beef-tea, or coffee administered, the patient kept in bed, and a disposition to sleep encouraged.

Watch the patient carefully for some time to see that breathing does not fail.

If the patient has been carried to the house, be careful to let the air circulate freely about the room, and prevent crowding round the patient.

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\* The Service formula for *carron oil* is to mix 12 parts olive oil, or raw linseed oil, with 12 parts of limewater, and 1 part tincture of opium.



## LIGHTS, BUOYAGE AND SIGNAL SYSTEMS

**LIGHTS.**—All lights of the Dominion of Canada under the control of the Department of Marine and Fisheries are maintained in operation whenever navigation in the vicinity is open. Lights used solely as harbour lights are not exhibited when the harbour is closed, although the general navigation may remain open. Fishing lights are maintained only during the fishing season. In any case where there is reasonable doubt whether the light is required it is kept in operation.

Light-vessels are placed in position each spring as early as the ice permits. The vessels in the river leave their stations soon after the 20th November annually.

Gas has been introduced for the light-buoys in river and lower St. Lawrence. These lights are usually automatically occulted.

**Light-vessels.—Riding lights.**—There is no uniformity of practice in regard to Canadian light-vessels carrying riding lights.

**BUOYAGE.**—The following system of buoyage is adopted in the waters of the Dominion of Canada:—

Approaching from seaward, all buoys on the starboard side of the channel are painted red, and, if numbered, marked with even numbers, and must be left on the starboard hand.

Approaching from seaward all buoys on the port side of the channel are painted black, and, if numbered, marked with odd numbers, and must be left on the port hand.

Numbers, when used, are in consecutive order commencing from seaward.

Buoys painted red and black in horizontal bands mark middle grounds, and are left on either hand.

Buoys painted white and black in vertical stripes mark mid-channel, or the fairway, and may be passed on either hand. These buoys are rarely used.

Pillar light, bell, and whistle buoys mark special positions, a detailed description of which is given when the mark is first established.

Conical buoys, when used, are always on the starboard side of the channel; conical topmarks on starboard hand buoys, and cylindrical topmarks on port hand buoys. All starboard hand



spar buoys have pointed tops and all port hand spar buoys have flat tops; otherwise the shapes of buoys have no special significance at present.

The rule for colouring buoys is also applicable to beacons and other day marks, so far as it may be practicable to carry it out.

The buoys in the lower St. Lawrence are numbered consecutively from Gaspé westward, and also bear the letter B (Below Quebec).

Buoys in the St. Lawrence river above Quebec are numbered under letters of the district, thus:—Q, Quebec; C, Champlain; L, Lake, including Lake St. Peter; and M, Montreal.

The spar buoys in the river are swift current buoys, ballasted with iron rings to keep them upright.

**Caution.**—Buoys marking outlying dangers, owing to their exposed positions, are always liable to break adrift or to other accident; therefore implicit reliance should not be placed on their being in position.

**Buoyage season.**—Buoys in the Dominion are, generally speaking, maintained in position during the season of navigation. In localities where the lights are maintained in operation throughout the year, the buoys are always kept in position. In districts where navigation is closed in winter, the buoys are kept out in autumn until the last vessel has cleared, or as late as the ice will allow, with due regard to their safety. The buoys are replaced in the spring, as soon as the ice will permit.

All the buoys, including the light-buoys, in the lower St. Lawrence between Gaspé and Quebec, are placed in position as early as possible after the ice passes down each spring, and are removed after the 10th November each autumn, the date varying with the season, and every effort is made to leave them out so long as the state of the ice permits, but belated vessels must not expect to find them in position after the ice has begun to run. Some of the more important buoys, if lifted before the last vessels have passed out, are temporarily replaced by wooden spars, in which case the pilots are duly notified, but no special notices to mariners describing the removal or replacing of buoys each season are issued.



The buoys, including the light-buoys, in the St. Lawrence river between Quebec and Montreal, are maintained in position during the season of navigation.

**Caution.—Damaging floating lights.**—Masters of vessels who injure, alter, or make fast to any aid to navigation, render themselves liable to a fine of \$200. Any master of a vessel who, through unavoidable accident, has displaced any aid to navigation, must give notice of the same to the nearest Customs officer, or be liable to a fine of \$50.

**Wrecks.**—Buoys, and the top sides of vessels used for marking wrecks, are painted green with a white inscription, and moored, when possible, near the side of the wreck next to mid-channel.

Wreck-marking vessels exhibit:—

By day.—Three balls from a yard, 20 feet above the sea; two placed vertically on the side that shipping may safely pass, and one on the other side.

By night.—Three *fixed white* lights, similarly arranged; the ordinary riding light is not shown.

Mariners must pass on that side of a wreck-marking vessel on which the two balls or two lights are shown.

## SIGNAL SYSTEMS

**Government stations for communication with shipping on the eastern coasts of Canada.**—The Government of Canada has in operation a very complete system of communication between the shore and vessels navigating the Atlantic coast and the St. Lawrence river to Montreal. This system includes a network of wireless telegraph stations; a chain of signal stations connected with the commercial telegraph lines; and a string of telephone stations in the river, whereby the progress of a vessel may be continuously reported from Crane island to Montreal.

**WIRELESS.**—The following is a list of the radio coast stations, the direction finding stations, and radio beacons maintained by this Department on the Atlantic coast, and the gulf and river St. Lawrence as far as Montreal.



## Coast Stations

No.	Station	Call Signal	Wave- length (metres)	Position			Hours of Service E.S.T.	Aid to Navigation Broad- cast
				Lat. North	Long. West			
				° ' "	° ' "			
(1)	St. John, N.B.	VAR	600	45 15 03	66 00 47		Continuous	
(2)	Yarmouth, N.S.	VAU	800, 600(a)	43 46 24	66 07 16		"	
(3)	Lurcher Lightship	VDR	600	43 48 20	66 31 54		The first half of every odd hour from 7 a.m. to 7.30 p.m. and from 10.00 to 10.30 p.m. (b).	
(4)	Cape Sable, N.S.	VCU	600	43 23 20	65 37 15		Continuous	9 a.m. and p.m. on 600 metres.
(5)	Camperdown, N.S.	VCS	600	44 31 10	63 32 40		"	
(6)	Sable Island, N.S.	VCT	600	43 56 20	60 01 40		"	
(7)	North Sydney, N.S.	VCO	600	46 13 10	60 14 50		"	
(8)	Cape Race, Nfld.	VCE	600	46 39 25	53 04 15		"	9.15 a.m. and p.m. on 600 metres.
(9)	Grindstone Island, Mag- dalen Islands.	VCN	600	47 23 00	61 54 20		"	
(10)	Belle Isle, Nfld.	VCM	600	51 52 52	55 21 44		"	9.30 a.m. and p.m. on 600 metres.
(11)	Pointe Amour, Nfld.	VCL	600	51 27 25	56 50 30		"	
(12)	Heath Point Lightship	VCI	600	49 03 00	61 30 30		Continuous (during season of navigation) (b)	
(13)	Fame Point, Que.	VCG	600	49 06 50	64 36 20		Continuous (during season of navigation)	8.45 a.m. and p.m. on 600 metres.
(14)	Clarke City, Que.	VCK	600	50 12 15	66 37 36		"	
(15)	Father Point, Que.	VCF	600	48 31 00	68 27 40		"	9 a.m. and p.m. on 600 metres.
(16)	Grosse Isle, Que.	VCD	600	47 02 00	70 40 05		Continuous	
(17)	Quebec, Que.	VCC	600	46 48 25	71 12 25		"	8.30 a.m. and p.m. on 600 metres.
(18)	Montreal, Que.	VCA	600	45 34 05	73 38 05		Continuous (during season of navigation)	
(19)	Canadian Government Cabot Straits Ice Patrol Vessel.	VCQ	600	.....	.....		Continuous in spring only, on the opening of navigation.	8 a.m. and p.m. on 600 metres.

(a) The Station handles on 600 metres public correspondence restricted to messages exchanged between vessels plying to Yarmouth, N.S., Bay of Fundy ports, and addressees in Yarmouth, N.S., and vicinity.

(b) The Station handles only messages relating to weather, ice, dangers to navigation and distress.



## Direction Finding Stations

No.	Station	Call Signal	Wave- length (metres)	Position		Hours of Service
				Lat. North	Long. West	
(20)	St. John, N.B.....	VAR	600(c) 800	° ' "	° ' "	Continuous.
(21)	Yarmouth, N.S.....	VAU	800	45 15 03	66 00 47	"
(22)	Chebucto Head, N.S.....	VAV	800	43 46 24	66 07 16	"
(23)	Canso, N.S.....	VAX	800	44 30 01	63 31 20	"
(24)	St. Paul Island, N.S.....	VAT	800	45 19 24	60 58 25	Continuous (during season of navigation).
(25)	Cape Race, Nfld.....	VAZ	800	47 12 15	60 08 45	Continuous.
(26)	Belle Isle.....	VCM	600(c) 800	46 39 10	53 05 05	Continuous.
				51 52 52	55 21 44	Continuous.

(c) The Station maintains watch on 600 metres. D.F. bearings are dealt with on 800 metres after communication has first been established on 600 metres.



## Radio Beacons

No.	Station	Call Signal	Wave- length (metres)	Position			Characteristic	Hours of Service
				Lat.	North	Long. West		
(27)	Lurcher Lightship.....	VDR	1,000	43	48	20	06 31 54	Groups of — — — for 2 minutes. Silence 3 minutes.
(28)	Seal Island, N.S.....	VAL	1,000	43	23	28	06 00 53	Groups of . . — — for 2 minutes. Silence 3 minutes.
(29)	Sambro Outer Bank Light- ship.	VCX	1,000	44	20	25	63 30 19	Groups of — — — — for 1 minute. Silence 4 minutes.
(30)	Cape Bauld, Nfld.....	VCZ	1,000	51	38	41	55 25 03	Groups of — . — — for 1 minute. Silence 1½ minutes.
(31)	Cape Ray, Nfld.....	VCR	1,000	47	37	02	59 18 20	Groups of — — — — for 2 minutes. Silence 3 minutes.
(32)	Heath Point Lightship...	VCI	1,000	49	03	00	61 30 30	Transmits groups of — — — upon request.

Continuous during foggy weather. Limited watches maintained on 600 metres. See No. (3)

Continuous during foggy weather. Operator carried this station. Ships desiring to communicate should enquire VAU or VCU for watches kept by him

Continuous during foggy weather. (Winter months only).

Continuous during foggy weather.

Continuous during foggy weather on 100 metres.

Continuous watch maintained on 600 metres (during season of navigation). See No. (12).



Masters of vessels equipped with wireless apparatus are requested to advise coast stations of any information they obtain respecting defects in aids to navigation, or any other items that would tend to the safety and protection of navigation. Masters of vessels equipped to receive the radio signals for D/F purposes are requested to listen in when in the vicinity of these stations and report the results of such reception to the Radio Inspector, H.M.C. Dockyard, Halifax, N.S., or to Radio Inspector, Old Post Office building, St. John, N.B., or to Radio Inspector, Marine Department, Old Customs building, Montreal, or directly to the Director of Radio, Department of Marine and Fisheries, Ottawa.

Direction finding stations will supply true bearings on request, as laid down in "Notice to Mariners No. 39 of 1920." All the above-mentioned coast and direction finding stations will handle the following messages free of charge:—

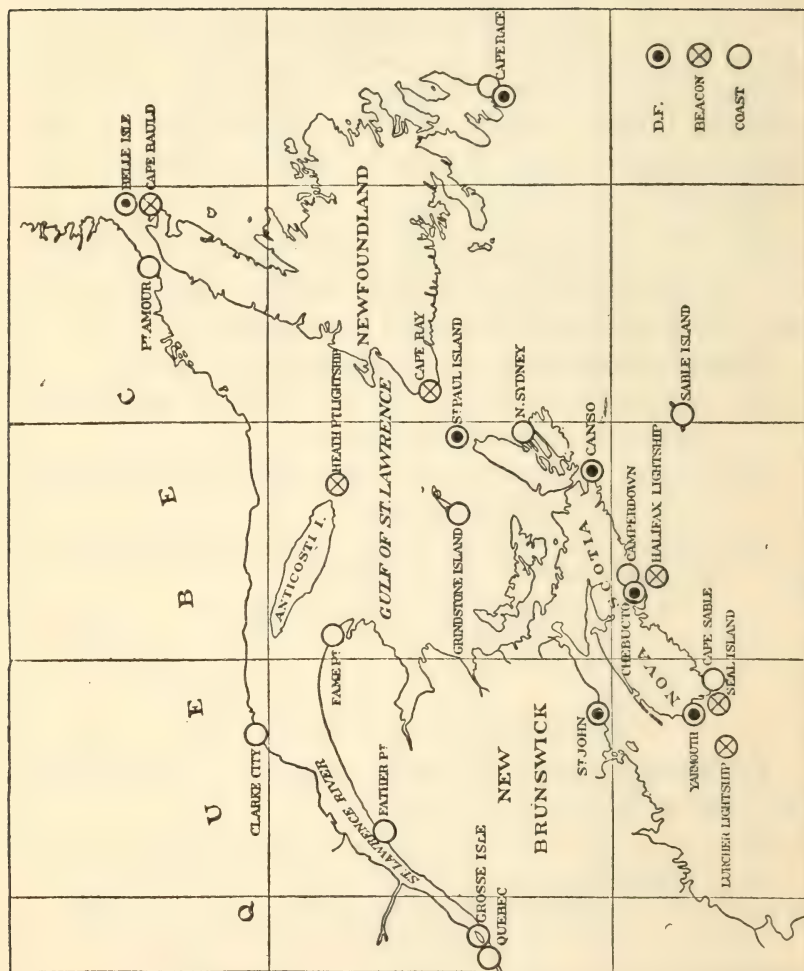
Messages appertaining to the navigation of any ship.

- (a) Between the captain of the ship and any government department or government official.
- (b) Between the captain of the ship and the officer-in-charge of any radiotelegraph station.
- (c) Between the captain of the ship and any person whatever in connection with the following:—
  1. Weather conditions and forecasts.
  2. Tide conditions.
  3. Ice.
  4. Reports on aids to navigation.

The Marconi Wireless Telegraph Company of Canada owns and operates the following stations:—

Station	Call Signal	Wave-length (metres)	Position		Service	Hours of Service
			Lat. North	Long. West		
			° ' "	° ' "		
Glace Bay, N.S. ....	GB	7,925	46 08 00	59 55 00	Transatlantic station.....	Continuous.
Louisburg, N.S. ....	VAS	2,200-2,800	46 09 16	59 56 48	Commercial coaststation	"





**Index map to stations operated by Government Radio Aid to Navigation Service (East coast, gulf and river St. Lawrence.**



### Ice Patrol

An ice patrol will be maintained in the gulf of St. Lawrence from:—Cape Ray to Bird rocks, Bird rocks to vicinity of Heath point, Heath point to cape Ray, from the opening of navigation in the spring until the route is clear of ice. The radio call sign VCQ has been allotted for the ice patrol vessel. This is a special call and will be used by whatever vessel is engaged in the service. A regular message embodying ice conditions, from cape Race to Quebec, and recommendations as to route to be followed will be made up by the ice patrol every four hours, commencing as from midnight E.S.T. and kept on file for immediate transmission by radio to ships, upon request. This information will also be broadcast four times daily by the ice patrol VCQ (a) at 8 a.m. and 8 p.m. E.S.T. on 600 metres spark. (b) at 8.30 a.m. and 8.30 p.m. E.S.T. on 1621 metres I.C.W. The coast radio stations at cape Race VCE, North Sidney VCO, and Grindstone VCN will copy this message and will be prepared to pass the same to ships requesting it. Cape Race will also include the message in his regular ice broadcast at 9.15 a.m. and p.m. E.S.T. daily.

Ships requiring the latest information on the gulf route should communicate directly with the ice patrol vessel VCQ on 600 metres spark. Vessels requiring information regarding ice conditions in the North Atlantic Lane Routes, should get in touch with the International Ice Patrol vessel, radio call sign NIDK on 600 metres, spark.

The work of the patrols will be greatly facilitated if incoming ships will co-operate in supplying information regarding ice in their vicinity.

Ice reports compiled by the International Patrol are broadcast as follows:—

Station	Call signal	Hours of service E.S.T.	Wavelength (metres)
Arlington.....	NAA.....	10 30 a.m.. 9. 55 p.m.. 5. 00 p.m.. 6. 00 a.m.. 6. 00 p.m.. 7. 00 a.m.. 7. 00 p.m..	2665 A.C. Tube. 2655 A.C. Tube. 17130 C.W. 706 Spark. 1621 C.W.
Annapolis.....	NSS.....		
Ice patrol ship.....	NIDK.....		



# MARINE SIGNAL SERVICE STATIONS

Atlantic Division.			Nautical Miles.
St. John.....	New Brunswick.....	Telephone.....	0
Partridge island.....	“.....	“.....	1
Pt. Lepreaux.....	“.....	“.....	22
Brier island.....	Nova Scotia.....	“.....	61
Camperdown.....	“.....	“.....	259
Halifax.....	“.....	“.....	267
Point Tupper.....	Cape Breton.....	Telegraph.....	444
Scatari island.....	“.....	“.....	495

Distances given are from St. John, N.B.

Eastern Division.			
*Quebec.....	North shore.....	Telephone.....	0
*St. Jean.....	Orleans island.....	“.....	14
Crane island.....	“.....	“.....	32
L'Islet.....	South shore.....	Telegraph.....	40
Cape Salmon.....	North shore.....	Telegraph & telephone.....	81
Rivière du Loup.....	South shore.....	Telegraph.....	92
Father point.....	“.....	“.....	157
*Bersimis.....	North shore.....	“.....	171
Little Métis.....	South shore.....	“.....	176
Matane.....	“.....	“.....	200
Pte. des Monts.....	North shore.....	“.....	219
Cap Chat.....	South shore.....	“.....	234
Marten river.....	“.....	“.....	260
Cape Magdalen.....	“.....	“.....	294
Fame point.....	“.....	“.....	325
Cap des Rosiers.....	“.....	“.....	349
Cap d'Espoir.....	Gaspé, gulf coast.....	“.....	377
Pte. Maquereau.....	“.....	“.....	400
West point.....	Anticosti island.....	“.....	332
South West point.....	“.....	“.....	360
South point.....	“.....	“.....	415
Heath point.....	“.....	“.....	438
Point Escuminac.....	E. coast of New Brunswick..	“.....	462
Amherst island.....	Magdalen islands.....	“.....	481
Money point.....	Cape Breton.....	Telephone.....	540
St. Paul's island.....	Cabot strait.....	“.....	538
Cape Ray.....	Newfoundland.....	Telegraph.....	553
Flat point.....	Cape Breton.....	“.....	591
Cape Race.....	Newfoundland.....	“.....	826
Pointe Amour.....	Labrador.....	Wireless telegraph....	673
Belle isle.....	Newfoundland.....	“.....	734

The International Code of Signals is used for communicating with the above stations.

Distances given are East of Quebec.

Central Division.			
*Montreal.....	North shore.....	Telephone.....	0
Longue pointe.....	“.....	“.....	5
Cap St. Michel.....	South shore.....	“.....	14
Bellmouth.....	“.....	“.....	30
Sorel.....	“.....	“.....	39
Three Rivers.....	North shore.....	“.....	71
Pointe Citrouille.....	“.....	“.....	85
St. Jean Deschaillons.....	South shore.....	“.....	93
Grondines.....	North shore.....	“.....	98
†Portneuf.....	“.....	“.....	108
St. Nicholas.....	South shore.....	“.....	127
†Bridge.....	“.....	“.....	133
*Quebec.....	North shore.....	“.....	139

Distances given are East of Montreal.

\*Not signal stations. Reporting stations only.

†Day stations only.



Any vessel showing its official number to the Brier island, point Lepreaux and Partridge island signal stations is reported immediately and promptly posted in St. John.

Any vessel showing its official number to any of the Marine Signal Service stations in the gulf or river St. Lawrence is reported immediately, and all reports are promptly posted on the bulletin board of the Canadian National Telegraph Company's office, Quebec, and on that of the Board of Trade, Montreal. These reports are repeated to the pilot station at Father point, so that pilots may be aware of the locality of inward bound vessels.

Vessels bound to and from the minor ports of the river and gulf of St. Lawrence are particularly requested to show their official numbers whenever possible.

Despatches to or from vessels are duly delivered as addressed. They are charged for at the ordinary telegraph rates between stations; but no charge is made for signalling between coast stations and vessels at sea; despatches may, by special request, be delivered in cipher, otherwise they are transmitted in ordinary language.

Vessels may obtain information as to winds, weather and ice at any visual signal station.

Halifax harbour, Nova Scotia, is served by a visual signal station at Camperdown from which information respecting approaching vessels is transmitted to another station at the citadel in the city.

Signal stations are equipped to receive and send messages by flag signals.

All stations report movements of vessels and daily weather conditions either to Montreal, Quebec, Sydney or St. John, and daily bulletins covering the same are issued at Montreal, Quebec and St. John.

All stations between Montreal and Quebec show weather conditions at points above and below station, both by day and by night. The sketch shown on page xlvii illustrates the manner in which this is done.



The Signal Service offices at Montreal, Quebec and St. John are open day and night for the purpose of providing the public with information regarding shipping matters.

There is a private telephone system connecting all stations from Lachine to Quebec. All other stations report either by wireless, land telegraph or telephone.

### Marine Signal Service Code

No. 1.—A vessel is aground obstructing channel.

Signal.—By day—Ball and drum.

By night—Two lights, red.

No. 2.—A vessel is aground partially obstructing channel.

Signal.—By day—Drum and ball.

By night—Two lights, white.

No. 3.—Dense fog, or smoke, or blinding snowstorm reported.

Signal.—By day—Cone.

By night—One light, red.

No. 4.—Foggy, smoky, or light snow reported.

Signal.—By day—Ball.

By night—One light, white.

No. 5.—Do you expect to go right through to Montreal or Quebec?

Signal.—By day—Ball and cone.

By night—Two lights, white and red.

NOTE.—Signal displayed at west end of cross-spar indicates river or points above station.

Signal displayed at east end of cross-spar indicates river or points below station.

For other communications, between vessels and stations the International code is to be used.

The above Marine Signal Service code is used by the ship channel signal stations between Longue pointe and Crane island. Below Crane island the Canadian code of storm signals is used.



## CANADIAN METEOROLOGICAL SERVICE STORM SIGNAL STATIONS

In addition to the stations mentioned above, from which vessels may obtain information regarding winds, weather and ice upon request, the Canadian Meteorological Service maintains storm signal stations at the following points in the area covered by this volume:—

Tadoussac. . . . . On top of Ilot point, 87 feet above  
H.W.

Father point. . . . . About 600 feet west of lighthouse.

Mont-Louis. . . . . On west side of entrance to harbour,  
about 80 yards from wharf.

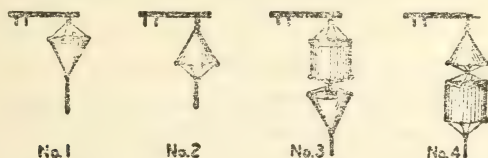
Fox river. . . . . About 300 yards east of centre of  
harbour.

Ellis bay. . . . . Close to shore end of wharf.

Gaspé. . . . . On bluff overlooking Paddy's shoal in  
harbour.

Seven islands. . . . . Adjoins telegraph office.

**The Canadian code of storm signals are made by means of  
cone and drum as follows:**



No. 1.—A cone, apex down, indicates the probability of a gale; at first, from an easterly direction.

No. 2.—A cone, apex up, the probability of a gale; at first, from a westerly direction.

No. 3.—A cylinder over a cone, apex down, indicates the probability of a heavy gale; at first, from an easterly direction.

No. 4.—A cone, apex up, over a cylinder, the probability of a heavy gale; at first, from a westerly direction.

The *night* signal corresponding to Nos. 1 and 3, is a *red* light; that, corresponding to Nos. 2 and 4, is a *red* light over a *white* light.



**PILOTAGE** on the St. Lawrence river is optional, though the payment of pilotage dues is compulsory, between Father point and Quebec, Father point and the head of the Saguenay river, and Quebec to Montreal, and all intermediate ports, with the following exceptions:—(*See Section 477, Chapter 113, Canada Shipping Act*).

- (a) Ships belonging to His Britannic Majesty.
- (b) Ships wholly employed in His Majesty's Service, while so employed the Masters of which have been appointed by His Majesty's Government, either in the United Kingdom or in Canada.
- (c) Ships propelled wholly or in part by steam:
  - (1) employed in trading from port to port in the same province, or employed in any one port or harbour.
  - (2) employed in trading between any one or more of the provinces of Quebec, New Brunswick, Nova Scotia, or Prince Edward Island, and any other or others of them, or
  - (3) employed in voyages between any port or ports in the said provinces or any of them and the port of New York or any port of the United States of America on the Atlantic, north of New York, or
  - (4) employed in voyages between any port in any of the said provinces and any port in Newfoundland.
  - (5) Ships registered in Canada engaged in fishing.
  - (6) Ships engaged in salvage or towing operations.
- (d) Ships registered in Canada of not more than two hundred and fifty tons registered tonnage.

The pilotage districts of Montreal and Quebec are under the control of the Hon. the Minister of Marine and Fisheries, who fixes the rates, which may vary from time to time.

The Pilot offices at Dalhousie St, Quebec, and No. 1 Common St., Montreal, are in charge of Asst. Superintendents and are open day and night during the navigation season.

Ships requiring pilots inward bound may secure them at Father point from the pilotage tender stationed there.

Pilots change at Quebec to take ships to Montreal.



Above Montreal there are no licensed pilots.

Applications for Pilots at Father point must be made to the Assistant Superintendent of Pilots at Father point.

Applications for Pilots at Quebec must be made at the office of the Assistant Superintendent of Quebec Pilots at 46 Dalhousie St., Quebec.

Applications for Pilots at Montreal must be made at the office of the Assistant Superintendent, Old Customs House Building, Place Royale, Montreal. (*See also page 54.*)

**WINDS.**—The prevailing winds, during the navigable season, are either directly up or directly down the estuary, following the course of the high lands on either side of the great valley of the St. Lawrence. Thus, a southeasterly wind in the gulf becomes easterly and northeasterly in the river. Westerly winds do not appear to be so much guided in direction by the high lands, excepting along the southern shore, where a southwesterly wind at Bic island may become a northwesterly wind at cape Gaspé. These winds frequently blow strong for three or four days in succession, the weather, with westerly winds, being fine, dry, clear and sunny, and with easterly winds cold, wet, and foggy.

Easterly winds prevail in the spring, and frequently blow for several weeks in succession. Westerly winds become more frequent towards summer, and southwesterly winds prevail in summer in all parts of the river and gulf. Light southerly winds blow occasionally, but northerly winds are not common in summer. Steady northwesterly winds are not frequent before September, excepting for a few hours at a time, when they generally succeed a calm following easterly winds; they become strong and usually back to the southwest. Northwesterly winds are dry, with a bright clear sky, flying clouds, and showers. Towards the end of September, winds from the northward of west become common, and then are often strong, steady winds of considerable duration. In October and November, northwesterly winds are frequently violent in heavy squalls, and passing showers of hail and snow, and attended with sharp frost.



Thunderstorms are common in July and August and last about one or two hours; the wind proceeding from them is generally violent and sudden, particularly when near high land, and sail should be fully and quickly reduced on their approach.

Strong winds seldom veer quickly from one quarter of the compass to the opposite, but generally fall calm, and are followed by a wind in the opposite direction; they may veer, however, several points.

Northwesterly winds seldom veer through north, to east and southeast, but they frequently back, by degrees, to the southwest, after becoming moderate. Southwesterly winds seldom veer through northwest to the eastward, but sometimes back to southeast and east.

In fine weather westerly winds of summer, a fresh breeze often decreases to a light breeze or calm at night, and freshens again from the same quarter on the following morning; it is only under these circumstances that there may be a land breeze off the north shore; a land breeze may also occur off the south shore, but not so decidedly or extending so far from the land. The north land wind is occasionally carried nearly over to the south shore just before daylight, but the south land wind seldom extends more than 5 or 6 miles off. Under the same circumstances, that is, with a fine weather westerly wind failing with the sun, a southwesterly land breeze frequently blows off the north coast of Anticosti at night and during the early part of the morning. If, however, the weather is not settled fair, and the wind does not fall with the sun, it is generally useless to run a vessel close inshore at night in order to obtain a breeze off the land.

**GALES.**—It is unusual for a very heavy gale of wind to occur in the gulf and river St. Lawrence from May to October, although fresh to strong breezes are common. There are, however, years the character of which is decidedly stormy; gales of wind of considerable strength then follow each other in quick succession and from opposite quarters. Also during August and September cyclonic storms, which originate as hurricanes in the West Indies, pass over the Eastern Maritime provinces, and are severely felt as far westward as Ontario.



When, after a continuance of westerly winds and fine weather, the barometer has risen some tenths above 30 inches and begins to fall, an easterly wind may be soon expected. If the barometric fall is accompanied by a warm hazy atmosphere and mirage during the day, and a heavy dew at night while the stars twinkle brightly, or there is a coloured aurora borealis, an approach of southerly or easterly wind is almost certain. At the commencement the southerly or easterly wind is usually light with fine weather, but if the barometer continues to fall the wind gradually increases, the sky becomes overcast, rain and fog follow, and continue with little intermission until dispersed by a fresh breeze from the contrary quarter.

If the fall of the barometer during the continuance of the southerly or easterly wind be very slow, the gale generally lasts some time and is not violent; if rapid, it is of short duration and of greater strength. When the barometer has fallen to 29 inches the southerly or easterly wind generally falls to a calm and in a short time a northwesterly gale commences. The strength of this succeeding gale is in proportion to the fall of the barometer and to the strength of the southerly or easterly gale which preceded it. A heavy cross sea remains for some time from the previous gale.

The barometer sometimes begins to rise in the interval of calm which precedes the northwest gale; at other times, at its commencement; then the fog and rain cease and the weather becomes quite clear, generally in a few hours, and sometimes almost immediately. The strength of the northwesterly gale is usually greatest soon after the beginning and diminishes as the barometer rises, the wind backing to the southwest. These circumstances are the reverse of those attending an easterly gale, which usually begins with a high barometer and clear weather, is light at first from the south or southeast and gradually increases as it backs to the eastward, with a falling barometer.

If, after a northwesterly gale has backed to southwest and become moderate, the barometer remains steady at a mean height, fine weather usually follows. If it reaches a considerable height but is unsteady, expect variable weather and wind



of moderate force. If, on the contrary, it rises quickly to a great height, a repetition of the southerly or easterly gale is probable. In some seasons the barometer has no sooner risen for one wind than it has begun to fall for another, and this stormy alternation has continued for months, whilst in others there has been scarcely a strong breeze during the whole summer.

**BAROMETER.**—The ordinary range of the barometer in the gulf and river St. Lawrence during the navigable season is from 29 to 30.5 inches, and its movements generally precede the change of the winds and weather.

There is a great difference in the weather in different seasons, but in spring or early summer, a northeasterly wind with a rising barometer, although, perhaps not for a few hours, will generally bring fine clear weather; and if a sudden and considerable fall of the mercury takes place the passage of a cyclonic depression may be expected, during which the wind will probably attain to gale force commencing at southwest with a falling barometer, and ending at northwest with a rising barometer.

Although a considerable fall of the barometer at times occurs without being directly followed by a strong wind, so also a strong breeze may arise without any indication from the barometer, but it is unlikely to reach the force of a gale. A gale so heavy as to be of serious consequence to a good vessel does not occur without being indicated by the barometer. It is remarkable that in the gulf and estuary of the St. Lawrence a high barometer is often indicative of a southerly or an easterly gale, and of wet and foggy weather, which usually accompanies its fall, whilst a low barometer is often the precursor of dry weather, which generally follows its rise.

**FOGS** occur in the gulf and river during the open or navigable season, and sometimes last several days continuously; they are most frequent in the early part of summer, and seldom fail to accompany an easterly wind of any strength or duration. In October and November, the fogs and rain previously attending easterly gales are replaced by thick snow. During westerly winds fogs are rare and never of long continuance.

The above general observations are subject, however, to restriction, according to locality or season. Thus winds between



south and west are usually clear weather winds above Anticosti, but are frequently accompanied with fog in the eastern parts of the gulf. Winds between south and east are almost always accompanied with rain and fog in every part. Northeasterly winds above *pointe des Monts* are often easterly or more to the southward in the gulf, changed in direction by the high lands of the south shore, and have therefore generally the same foggy character. The winds here referred to are those of considerable strength and duration.

Moderate and partial fine weather winds occur without fog in any season and in any locality. In the early part of the navigable season, especially in April and May, northeasterly winds with clear weather are frequent, and they also occur occasionally at other seasons, in every part of the gulf and river.

Fogs in easterly gales extend high above the sea, and cannot be seen over from a vessel's masthead; at times the land or other objects may be distinguished at the distance of half a mile or more in day time. Fogs in calms, especially after strong winds, are frequently so dense as to conceal a vessel within hail, but usually they are not of much height, so that objects at a distance of 50 yards obscured from a person on deck can be seen by a person some 50 feet up the rigging.

When land is visible in foggy weather, estimations of distance are usually in excess of the correct distance. No reliance should be placed upon a position assumed from the distance at which the sound or surf breaking on a rocky shore was heard, but where steep cliffs extend to the sea, the proximity of a steam vessel to them may be detected by the echo of the whistle, although this cannot be trusted. The only safe guide is the constant use of the lead.

**ICE.**—The harbours and bays in the lower parts of the river begin to freeze early in December, and there is heavy ice at the mouth of the river towards the end of that month, which lasts until about the middle of April, but during all the season leads can be found when the wind drives the ice to either side of the river. As a rule navigation at Quebec is closed by ice from the 26th November to the 27th April, but generally it is considered unsafe after the 15th November or before the 25th April, and



even after the latter date vessels are often embarrassed by drift ice through which, however, steam vessels can usually force their way. (*For Ice Patrol in the Gulf see page xliii*).

**LOCAL MAGNETIC DISTURBANCE.**—An opinion is prevalent that the compasses of vessels are disturbed in the gulf and river, and such disturbance has been attributed to magnetic ores of iron in the hills, particularly those of the north shore. Magnetic oxide of iron does exist abundantly, and attracts the needle of a compass placed on shore very powerfully at some points, particularly along the shore eastward of Seven islands bay. Among the Mingan islands, the variation was found to vary from this cause from  $19^{\circ}$  to  $31^{\circ}$  West. At Portneuf and Manikuagan point, the needle was also disturbed. Although it is not possible that the disturbing forces here described can extend to ships navigating off the coasts of the above-mentioned places, areas of disturbances may exist at the bottom of the adjoining seas, producing small disturbances in ships when in shallow water. Actual experiences of this kind have occurred, but they are not common. In deep water, that is, depths exceeding 50 fathoms, no effect has been observed.

**CURRENTS.**—The currents in the gulf of St. Lawrence, in the various straits, and in the entrance to the St. Lawrence, are more fully discussed in publications by the Department of Marine and Fisheries of Canada, compiled from observations by Dr. W. Bell Dawson, in charge of the Tidal and Current Survey.

**Currents in the Lower St. Lawrence.—Gaspé Current.**—There is a constant downward current in the middle of the estuary which continues along the south shore for the whole length of the Gaspé coast. It is first felt below Red islet, and is met by a cross current from pointe des Monts, setting towards cap Chat. Below this it is still more pronounced, and is known as the Gaspé current. It continues along the shore as far as cape Gaspé, from whence it sets towards the Magdalen islands. From cape Magdalen to cape



Gaspé it has a width of about 12 miles, and is usually found to lie between 2 and 14 miles off-shore. It is affected by the tide, but never reversed, and at an offing of about 4 or 5 miles attains its greatest strength, having a speed at springs of over 2 knots. At times the tidal stream running westward on the flood is found within one or two miles off the shore, but never exceeds one knot.

It is possible, under exceptional circumstances, for the Gaspé current to be displaced and lie farther off-shore near the middle of the passage between the Gaspé coast and Anticosti, but this is a rare occurrence.

In the middle of the passage between Anticosti and the Gaspé coast, and on the Anticosti side, the streams show a continuous veer in a right-hand direction throughout a tidal period; there is also good evidence that the water here makes westward on the whole to compensate for the outflow of the Gaspé current.

**TIDAL STREAMS.**—The flood undulation ascends the Lower St. Lawrence in the wide deep water until it arrives at the comparatively narrow pass formed by Green island, Red islet reef, and the extensive shoals off the entrance of the Saguenay river; here it is obstructed, and a part of it being turned back, forms an eddy flood stream setting from below Red islet reef towards Razade islets, as shown by the arrows on the chart. During the ebb tide, the stream from the Saguenay sets over to the southward, and takes the same direction. Therefore, from the mouth of the Saguenay to cap Chat, there is a constant down-going stream, which occupies more than half the width of the river on its southern side; its rate is about  $1\frac{1}{2}$  to  $2\frac{1}{2}$  knots. A short distance below Red islet reef the stream is very strong, about 4 knots, but its rate decreases to the eastward, where its direction is towards Razade islets, off which its rate is 2 to 3 knots.

During the ebb the stream runs downwards on both sides of the estuary stronger on the south than on the north shore, and weakest in the middle. That on the north side is deflected southward by Mille Vaches, Bersimis, Manikugan, and des Monts points, and by the ebbing streams of the large rivers



between them. This southerly set must be allowed for, especially in sailing vessels with a northerly wind, to prevent being set upon a lee shore.

There is no upward or flood tidal stream along the southern shore of the estuary from cape Gaspé to a few miles below Red islet, except southward of the down-going current, and closer inshore than vessels usually venture to go, or within about one to  $1\frac{1}{2}$  miles off the land.

During the flood there is usually slack water northward of the down-going current, whilst along the north shore the flood stream is regular in its recurrence, its rate increasing as the estuary is ascended. The rate of the flood stream is greatest along the north shore, and it diminishes to the southward till at about 9 miles from that shore it is imperceptible. These differences in the rates and directions of the streams produce strong ripples in many places, the positions of which vary according to the times of the tide, and perhaps from the force and direction of the wind.

Round pointe des Monts, there is little or no flood stream excepting very close inshore.

Both flood and tidal streams run from above Red islet to cap à la Roche over the whole breadth of the river.

**TIDES.**—At the entrance of the St. Lawrence estuary the tide has a range of 6 to 8 feet, but because of the gradual narrowing and shoaling of the river the range increases as the river is ascended. The maximum range of 19 feet is attained at Grosse isle; at Quebec 25 miles farther up the range is 18 feet, but at 40 miles above Quebec the tide is to a large extent cut off by the Richilieu rapids, and it ceases to be felt at Three Rivers, at the lower end of lake St. Peter.

At the same time a retardation is caused in the progress of the tidal wave, so that high water occurs at Quebec 4 hours 23 minutes later than at Father point.

The flood and ebb streams do not begin respectively at high and low water, but continue to flow after the maximum or minimum height of the tide is reached. Below is given a table showing, at several points on the river, the relation between the times of local high and low waters and the corresponding times of the



flood and ebb streams. Tables giving the times of the turn of the tide in the Lower traverse for every tide during the season of navigation are given in the Tide Tables.

Place	Flood stream begins after local L.W.	Ebb stream begins after local H.W.	Duration of flood stream	Duration of ebb stream
	H. M.	H. M.	H. M.	H. M.
Quebec.....	1 10	1 05	4 55	7 30
St. Laurent.....	0 55	1 10	5 00	7 25
Berthier.....	1 10	1 05	5 05	7 20
Grosse isle.....	1 00	1 05	5 10	7 10
L'Islet.....	0 46	0 20	5 30	6 50
Orignaux.....	0 30	1 10	5 55	6 30
Brandyot channel.....	1 15	1 00	6 05	6 20

**Tide Tables** are issued annually, by the Hydrographic Survey Branch of the Department of Marine and Fisheries of Canada, for Quebec and Father point, with tidal differences for the gulf and river St. Lawrence.

**GENERAL DIRECTIONS.**—On the inward course, some coasting vessels are tempted to take a route close in-shore to obtain help from the upward flood; but apart from the risk in so doing, this in-shore flood is in most places only strong enough to be of service about the time of spring tides, and then only for the flood period. On the whole, better time can be made by keeping out to an offing of 8 to 10 miles, near the outer edge of the current, where it is usually weak enough to be inappreciable. On the outward course, a distinct advantage will be gained by keeping in the strength of the Gaspé current at an offing of 4 or 5 miles, from cap Chat eastward. This advantage will be more marked on the ebb tide.

**Caution.**—The south shore of the estuary from Gaspé as far as Matane, is so bold, that a vessel may be in 50 fathoms when within 3 miles of the shore. Below Matane the 30-fathom contour is nowhere more than 2 miles from the shore. Several vessels have stranded in the vicinity of Matane when coming up the river, on account of having mistaken their positions because of the heavy downward current, and altered their courses to port too soon, on the assumption that they were above Matane when they were actually several miles eastward of it.



**Bearings** given in this work are magnetic, and are from seaward, unless otherwise stated.

**Soundings** are reduced to the level of low water of ordinary spring tides.

**Distances** are expressed in sea miles of 60 to a degree of latitude.

A cable's length is assumed to be equal to 100 fathoms or 200 yards.

Remarks on tidal streams are based on the data obtained by the Tidal Survey under Dr. W. Bell Dawson, and on observations made during the progress of the survey of the district.

More detailed information as to tides, lights, buoys, &c., can be obtained from the various publications issued by the Marine and Fisheries Department.

## LIST OF CHARTS COVERING THIS VOLUME

PUBLISHED BY THE HYDROGRAPHIC SURVEY OF CANADA

*Price 25 cents each*

### TITLE

- 216. Anticosti (S.W. Pt.) to cape Magdalen.
- 212. Anticosti island to Bic island.
- 214. Bay of Seven islands.
- 213. Cape Magdalen to pointe des Monts.
- 215. Pointe des Monts to Father point.
- 211. Father point to pointe aux Orignaux.
- 210. Bersimis river to Bic island.
- 204. Bic island to White island.
- 203. The approaches to Saguenay river.
- 209. Saguenay river, St. Fulgence to Shipshaw.
- 201. White island to pointe aux Orignaux.
- 207. Malbaie to Goose island.
- 205. South Channel.
- 206. The Traverses.
- 208. Grosse isle to Quebec.
- 21. Quebec harbour.

PUBLISHED BY THE HYDROGRAPHIC OFFICE OF THE ADMIRALTY

1370. Saguenay river.





CANADA

ST. LAWRENCE RIVER  
(Below Quebec)

## INDEX TO CHARTS AND PLANS 4

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# ST. LAWRENCE RIVER PILOT BELOW QUEBEC

(CANADIAN EDITION)

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## CHAPTER I SOUTH SHORE

### CAP DES ROSIERS TO CAPE MAGDALEN

**THE SOUTHERN SHORE** of the estuary, between cape Gaspé and cap Chat, a distance of 117 miles, is clear of dangers outside of the 10-fathom line, with the exception of Serpent reef. Numerous shoal spots, however, occur close inside that contour.

**Caution.**—The shore, between cape Gaspé and cap Chat, although so free from off-lying shoals, nevertheless must be guarded against in dark foggy nights, since the water everywhere along it is too deep to afford sufficient warning by the lead for the safety of vessels. The land along its whole extent, excepting in some of the bays is of highly inclined slate and graywacke rocks, which would quickly cut through a vessel's bottom on her going ashore.

**Current.**—(*See page liv*)

**Communication.**—A steamer of the Clarke Steamship Line runs between Gaspé and Montreal and Quebec fortnightly, and calls at cap des Rosiers, Griffon cove, Great Fox river, Little Fox river, pointe Jaune, Anse-au-Vallon, Grand Etang, pointe Sèche, Cloridorme point, Frigate point, Petite and Grande Vallée, cape Magdalen, Little Magdalen, St. Antoine, Mont Louis, Claude river, Marten river, Ste. Anne des Monts, cap Chat, Les Mechins, Ste. Félicité, and Matane, both inwards and outwards.

**The coast** of the Gaspé peninsula from cap des Rosiers to cape Magdalen forms a regular outward curve. The shore is generally cliffy, bold, without beach and is indented by a number



of bays and coves. The topography of the inland country is rugged and from the shore hills rise to elevations of 1,000 feet one to two miles inland. Reefs extending one to two cables from shore border the whole stretch of coast, except in the bottom of bays.

**Banks of soundings.**—The 10, 20 and 100 fathom contours are well defined and follow closely the trend of the coast. At cap des Rosiers these depths are respectively 3,000, 6,200 and 27,500 feet off shore, at Serpent reef 4,200, 5,500 and 18,000 feet off, at Frigate point, 1,500, 4,000 and 9,000 feet off.

**Cap des Rosiers**,  $6\frac{1}{2}$  miles northward of cape Gaspé, is low, and of graywacke and slate rocks. Shoal water borders the cape for about a quarter of a mile, and a reef extends half a mile from the shore, off a conspicuous church in the bay. There is shelter under cap des Rosiers from northwesterly winds, but the ground is not very good, and the easterly swell that frequently rolls in renders it a dangerous anchorage. There are fishing establishments on the cape and in its vicinity.

**LIGHT** (*Lat.*  $48^{\circ}-51'-23''$  N., *Long.*  $64^{\circ}-12'-07''$  W.)—From a white, circular, stone, clapboarded lighthouse, 112 feet high, is shown at a height of 136 feet above high water, an *occulting white* light, thus; visible *15 secs.*, eclipse *5 secs.*

**Fog signal.**—At the lighthouse, a diaphone operated by compressed air, in thick or foggy weather gives *3 blasts every minute*, thus; blast *2 secs.*, silence *3 secs.*, blast *2 secs.*, silence *3 secs.*, blast *2 secs.*, silence *48 secs.*

**Marine signal station.**—The Canadian Government maintains a telegraph and signal station at this lighthouse. It is included in Lloyd's system. (*See page xliv.*)

**Rocky shoal.**—A rock, with 22 feet of water over it at low water, lying immediately inside the 10-fathom contour, and 2,800 feet from shore, bears N.W. by N.,  $2\frac{1}{2}$  miles from cap des Rosiers lighthouse.

**Jersey cove**, 3 miles N.  $\frac{1}{2}$  W. from cap des Rosiers, is a small fishing village. A break in the reef, marked by leading lights,



allows small boats to approach close to shore, and affords good landing on the gravel beach. A rock on the north side of the bay covers at high water.

**Leading lights**, *fixed red*, are shown from two poles with white sheds at base. In line they bear N.W. by W.  $\frac{3}{4}$  W. and lead in 5 feet of water 200 feet from shore.

**Griffon cove** and river are  $6\frac{1}{2}$  miles N. by W.  $\frac{1}{2}$  W. from cap des Rosiers. The cove is about 2 miles wide at its entrance and half a mile deep. The 3-fathom contour at the northwestern part of the bay is about 3 cables off-shore and at the eastern part half that distance. The population around Griffon cove was 930 in 1921.

**Supplies** of water, wood, and occasionally fresh provisions may be obtained.

**Leading lights**, *fixed red*, are shown from two white masts, with white diamond-slatted daymarks attached, on the shore of Griffon cove. In line they bear W.  $\frac{1}{2}$  S.

**Anchorage**.—Vessels anchor in about 6 fathoms with the front leading light open slightly to eastward and English point bearing N.W.  $\frac{1}{2}$  W. Smaller vessels may anchor in 3 fathoms with English point bearing N.N.E. and distant 2 cables, but the holding ground in Griffon cove is poor.

**Great Fox river**.—The shore from Griffon cove trends N. by W.  $\frac{3}{4}$  W. for nearly 5 miles to a small bay about three quarters of a mile wide, and a third of a mile deep, with a fine sandy beach at its head, into which Great Fox river, a brook, flows. Fox point and cape Goillon are respectively the eastern and western entrance points of the bay. There are reefs off each of these points which reduce the breadth of the entrance to a quarter of a mile, and afford shelter to boats and small craft in a depth of 2 to  $2\frac{1}{2}$  fathoms, fine dark sand. At a quarter of a mile outside the reefs, which extend only a short distance to seaward, there is a depth of 15 fathoms, sand and broken shell.



**Government wharf.**—A wharf, 850 feet long, projects in a N. by W. direction from the east point of the bay. It has a depth of 22 feet at its outer end at low water springs.

**Buoy.**—A black can buoy is moored in 5 fathoms water, in the middle of Great Fox river bay, to indicate the anchorage ground. Vessels should not go inside this buoy, as fishermen lay their nets to that limit.

**Leading lights.**—The front light, *fixed red*, is shown from a mast on the outer end of the wharf, and the back light, also *fixed red*, 1,100 feet S.S.W.  $\frac{3}{4}$  W. from the front light is shown from an open framework tower with white, diamond-slatted daymark attached. The lights in line lead to the wharf, passing close eastward of the buoy.

**Storm signal station.**—About 300 feet westward of the church at Fox river is a storm signal station maintained by the Canadian Meteorological Service. (*See page xlvii.*)

**Settlement.**—Great Fox river is one of the most ancient settlements in the county of Gaspé, and it is the first important fishing station and business place met with on the southern shore of the St. Lawrence above Gaspé basin. There is a large stone church at the settlement. The population in 1921 was 2,191, and the principal industries are farming and fishing.

**Supplies.**—In fine summer weather a vessel might anchor off Great Fox river and obtain water, wood, and fresh provisions.

**Little Fox river,** a brook, flows into the small sand-beached cove about a mile westward of cape Goillon. A small fishing settlement is located here.

**Light.**—On the shore, at the entrance to the river, is exhibited from a pole extending from the roof of a small white shed and at an elevation of 44 feet above high water, a *fixed red* light. It should be visible 7 miles in clear weather.



**Serpent point**, (St. Maurice de l'Echourie) is about 5 miles N.N.W. from Fox point. A settlement here contains a church and telegraph office.

**Serpent reef** extends about one mile southeastward from the point. A rock, with 16 feet of water over it, lies on the outer end of the reef, S.E.  $\frac{1}{2}$  E., one mile from the point, and two thirds of a mile from shore. Another head, with only 7 feet over it, lies S.E.  $\frac{1}{2}$  S., two thirds of a mile from the point, and half a mile from shore. Midway between these two spots is a depth of 5 fathoms.

**Buoy**.—A black can buoy is moored in 14 fathoms off the outer part of this reef. Vessels must not pass between the buoy and the land. Note.—This buoy is occasionally washed away.

**Leading lights**.—For the assistance of local boats anchoring off the village, leading lights have been established. The front light, *fixed red*, 40 feet above high water, is exhibited from a white mast with white shed at base, close to the edge of the cliff. A similar back light, 76 feet high, is distant 486 feet from the front light. In line they bear N.W.  $\frac{1}{4}$  W., and lead in deepest water between Serpent reef and the mainland.

**Buoy**.—A black spar buoy, 3,200 feet from the front light and about 250 feet south of the line of range, is moored in  $5\frac{1}{2}$  fathoms of water for the purpose of marking the edge of the 5-fathom contour.

**Fame point**.—The shore of the estuary from Serpent point trends N.N.W.  $\frac{3}{4}$  W.,  $6\frac{1}{2}$  miles to Fame point.

**LIGHT** (*Lat.  $49^{\circ}-06'-31''$  N., Long.  $64^{\circ}-36'-08''$  W.*).—From a red cylindrical iron tower, 49 feet high, on Fame point, is shown, at a height of 190 feet above high water, a *white group flashing* light, giving *2 flashes every 10 seconds*, thus; flash  $\frac{1}{2}$  sec.; eclipse  $1\frac{1}{2}$  secs.; flash  $\frac{1}{2}$  sec.; eclipse  $7\frac{1}{2}$  secs. In clear weather the light is visible a distance of 20 miles from all points of approach.

Variation  $27^{\circ}$  W.



**Fog signal.**—In thick or foggy weather, a diaphone, operated by compressed air, sounds a blast of 4 *seconds* duration *every minute*, from a red rectangular wooden building, 17 yards south-eastward of the lighthouse.

**Marine signal station.**—The Canadian Government maintains a marine signal and telegraph station at Fame point lighthouse. It is included in Lloyd's system. (*See page xliv.*)

**Radiotelegraph station.**—The Canadian Government maintains a radiotelegraph station at the lighthouse, available at all hours of the day and night during the season of navigation. The call letters are VCG. (*See page xxxviii.*)

**The Great Pond**, (Grand Etang), N.W.  $\frac{1}{2}$  W., 6 miles from Fame point, is a small creek which affords shelter only to boats, and may be recognized by the houses and stages of the fishermen.

**Pointe Sèche**,  $2\frac{1}{3}$  miles N.N.W. from Grand Etang, is the eastern point of a small bay known as St. Yvon bay.

**Cloridorme bay** is  $2\frac{1}{2}$  miles N.W. by N. from pointe Sèche. A spit makes off from the eastern point of the bay, a depth of 16 feet being found at a distance of 2,600 feet, N.E. by E.  $\frac{3}{4}$  E. from the church. Another shoal with a depth of 13 feet over it lies 4 cables from the front leading light and 500 feet eastward of the present alignment of lights. A 29 foot spot lies 2,800 feet from the front light and distant 100 feet westward of the present line of range.

**Leading lights.**—*Fixed red* lights are exhibited from two white masts with diamond-slatted daymarks attached. The front light 32 feet above high water, is situated close to the edge of the cliff, and the back light, 69 feet above high water, is distant 245 feet from the front light. In line they bear S.W.  $\frac{1}{4}$  W. and lead 1,000 feet eastward of the drying reef off the western point of the bay.

**Anchorage.**—Anchorage in 4 fathoms may be obtained with the front leading light slightly open to eastward and the western point of the bay bearing N.W.  $\frac{1}{4}$  N. The holding ground is poor.

Variation  $27^{\circ}$  W.



**Settlement.**—The village of Cloridorme, built around the shores of the bay, has a population of about 950. It contains a church with spire.

From Cloridorme point, the western point of Cloridorme bay, the coast trends N.W.  $\frac{1}{4}$  N.,  $3\frac{1}{4}$  miles to Frigate point. There are numerous white cottages and a conspicuous waterfall westward of the point.

**Petite Vallée** is a small indentation in the coast  $4\frac{1}{2}$  miles N. W.  $\frac{1}{2}$  W. from Frigate point. A small fishing settlement with a population of 201, is located here. In the bottom of the cove is a stream which can be entered by small fishing boats at high water.

**Wharf.**—A wharf, about 250 feet long, and with 10 feet of water at its outer end at low water, extends from the eastern side of the cove. It affords shelter to small boats.

**Leading lights.**—*Fixed white* leading lights are exhibited from two white masts. The front light, 18 feet above high water, is situated about 100 feet from the outer end of Government wharf, and the back light, 39 feet above high water, is situated on shore at a distance of 760 feet from the front light. In line they bear S. by W.  $\frac{3}{4}$  W.

**Long point** is about half a mile westward of Petite Vallée. A drying reef extends 700 feet from the point and forms a small sand beach cove on the western side of the point. A small fishing settlement is located on the shore.

A small rock islet lies 1,000 feet off shore in a position N.W.  $\frac{1}{4}$  W., 4,200 feet from Long point.

**Grande Vallée.**—About 8 miles N.W.  $\frac{3}{4}$  W. from Frigate point the shore is indented by a small bay half a mile wide between the entrance points, and with a depth of water of 3 fathoms midway between the points. A small stream flows into the southeastern corner of the bay.

**Government wharf.**—A small wharf, now in a badly dilapidated condition, is located on the eastern side of the bay.

Variation  $27^{\circ}$  W.



**Settlement.**—A village, with a population of 750, is built about the shores of the bay. It contains a church with spire near the eastern point, and a disused sawmill near the mouth of the river. There is a cross on each entrance point of the bay.

**Leading lights,** *fixed red*, are shown from two white masts with diamond-shaped daymarks attached, at Grande Vallée. In line they bear S.W.  $\frac{3}{4}$  S.

**Black point,** a low rock, reef-bordered promontory  $6\frac{1}{2}$  miles N.W. by W. of Grande Vallée, is the eastern point of the bay immediately eastward of cape Magdalen.

Variation  $27^{\circ}$  W.



## CHAPTER II

### SOUTH SHORE

#### CAPE MAGDALEN TO MARTEN RIVER

##### (RIVIÈRE À LA MARTRE)

**The shore** from cape Magdalen runs N.W. by W.  $\frac{1}{2}$  W., 9 miles to pointe du Gros Mâle, a prominent headland about 300 feet high and the most northerly point of the coast on the south shore of the St. Lawrence river. This stretch of coast is nearly straight with but two small indentations under a quarter of a mile deep. The shore is rocky with cliffs 60 feet high in the first half of the distance, and between 400 and 500 feet in height in the second half. Rounded wooded hills rise to about 1,700 feet within a mile of the shore. A high conical hill, about 2,500 feet high, situated back of Magdalen river, stands out prominently over the front range of hills, when seen about 10 to 12 miles from shore.

**From pointe du Gros Mâle** the general direction of the shore is W. by N.  $\frac{3}{4}$  N.,  $24\frac{1}{2}$  miles to Marten river. The coast along this stretch is rocky, with cliffs or steep slopes and wooded hills rising to 1,500 feet close to the shore. It is broken by a succession of four bays, anse Pleureuse, Mont-Louis, rivière à Pierre and rivière à Claude, evenly distributed in a distance of 15 miles from pointe du Gros Mâle. These bays are very similar in aspect and character and afford very little shelter.

**Communications.**—A road joins cape Magdalen to Marten river, winding its way around the steep slope, alternately following the edge of the cliffs, receding about a mile inland, and passing on the beach. Except during the winter season, most of the travelling is done with motor boats.

**Banks of sounding.**—Between cape Magdalen and Marten river the coast is clean. It is fringed with reefs of slate drying out to an average distance of 300 feet. Off the points of bays, these reefs sometimes dry out to  $2\frac{1}{2}$  cables. The depth increases

Variation  $27^{\circ}$  W.



rapidly from shore to a well defined 20-fathom contour running nearly parallel to the shore line at an average distance of half a mile, but extending to three quarters of a mile off the western points of the above mentioned bays. The 100-fathom contour also follows the general direction of the coast. It is 3 miles off shore at cape Magdalen, keeps closely at this distance off to rivière à Pierre, 20 miles to northwestward, and is  $2\frac{1}{2}$  miles off at Marten river.

**Cape Magdalen** lies 29 miles N.W. of Fame point light-house. It is a rocky promontory, with cliffs about 60 feet high, jutting out a short distance from the range of hills forming the shore. A reef of rocks, partly dry at low water, extends about 2 cables to eastward.

**Magdalen river** flows close to the cliffs of the cape, entering the northwestern side of a sandy bay. Its entrance is sheltered from northwesterly winds by the reef of rocks, extending from cape Magdalen. The river is 30 yards wide at the mouth and has a depth of 7 feet at low water. For a short distance within, there is a depth of 10 feet with fine sand. At spring tides 13 feet can be carried into the river which is occasionally used by small vessels up to 100 tons. These craft warp in when the sea is smooth.

**A wharf**, about 200 feet long, extends N.N.E. from the sandy beach,  $8\frac{1}{2}$  cables from cape Magdalen. It has 5 feet at low water at its outer end. A pulp mill is located about 6 miles inland and is connected to the wharf by a railway. The mill is not now in operation.

**Shoals.**—A rock, with a least depth of 14 feet, lies 3 cables N.E.  $\frac{3}{8}$  N. from Black point situated  $1\frac{1}{4}$  miles southeastward of cape Magdalen. This rock is surrounded by depths of 5 fathoms.

Extending 2 cables farther westward is another rocky patch, parallel to the shore, with several spots of 18 feet of water over them.

A patch with a least depth of 25 feet, close to the edge of the 10-fathom contour, lies S.E. by E.  $\frac{7}{8}$  E. and distant 11 cables from the lighthouse.



A narrow rocky patch, about half a cable long, extending in an easterly and westerly direction, with a least depth of 9 feet over it, lies on the edge of the 5-fathom contour, and about 4 cables off the outer end of the wharf. This spot lies 8 cables S.E. from cape Magdalen lighthouse.

**Anchorage.**—Temporary anchorage can be obtained during fine weather in 6 fathoms, sand and gravel, with the lighthouse bearing N.W. by W.  $7\frac{1}{2}$  cables. Wood and water can be obtained here.

**LIGHT** (*Lat.  $49^{\circ}-15'-05''$  N., Long.  $65^{\circ}-19'-32''$  W.*)—From a white cylindrical concrete tower with a red roof, situated on cape Magdalen, is shown at a height of 146 feet above high water, a *group flashing white light*, giving *3 flashes every 30 seconds*. In clear weather it is visible 18 miles from all points of approach.

**Fog signal.**—In thick and foggy weather, a diaphone, in a white wooden building with red roof westward of the lighthouse, gives *2 blasts of 3 secs. duration every minute*, thus, blast *3 secs.*, silence *3 secs.*, blast *3 secs.*, silence *51 secs.*

**Marine signal station.**—There is a telegraph and signal station at the lighthouse. (*See page xliv.*)

**Village.**—A few houses are grouped around the lighthouse and along the shores of the sandy bay to eastward, but the village of Magdalen proper is about  $4\frac{1}{2}$  miles to northwestward, where there is a church with a conspicuous spire, and a group of houses clustered around it. The rivière Petite Madeleine, with its mouth located in the small indentation of the shore close eastward of the church, is lost on the drying reef.

**Manche d'Epée**,  $4\frac{1}{2}$  miles N.W. by W.  $\frac{3}{4}$  W. from cape Magdalen, is a small fishing village with about 20 houses spread around a shallow sandy bay. A small stream, the rivière du Manche d'Epée, is located in the western corner. The bay is steep-to, and affords good landing for boats in a westerly wind.

**The shore** between cape Magdalen and Manche d'Epée is straight, with cliffs about 70 feet high. The foot of the slope



of the back hills, about three quarters of a mile distant at cape Magdalen, gradually approaches the shore, leaving but a narrow strip of cultivated land. Narrow reefs of slate extend half a cable from the shore at low water.

**Pointe du Gros Mâle** is a conspicuous headland N.W. by W.  $\frac{1}{4}$  W., 5 miles from Manche d'Epée. It is a bold cliff, 300 feet high.

The village of St. Antoine is located in a small bay immediately southeastward of this point. A conspicuous church, painted brown with a red roof, stands 100 feet above the sea at the western end of the village. The rivière du Gros Mâle flows near the western end of the bay. This bay is open to winds, and reefs of slate extending about one cable from the shore make it difficult landing for boats at low water.

**Pleureuse point**, W. by N.  $\frac{3}{4}$  N., 3 miles from pointe du Gros Mâle forms the western point of a bay one mile wide and half a mile deep. This bay affords no shelter to vessels. A river flows into the centre of the bay and from its entrance to the western point there is shoal water for about half a mile off. Reefs with large boulders extend off the western point. Houses are scattered along the shoreline bordering the bay. About one mile up the river is a lake, one mile long, a quarter of a mile wide and 50 feet in elevation above sea level.

**Mont-Louis river**,  $4\frac{1}{2}$  miles westward of Pleureuse point is 60 feet wide at the entrance and about dry at low water. A church with a spire and numerous houses have been built on the shingle beach forming the eastern point at the entrance to the river.

**Mont-Louis bay**, a small bay into which flows the Mont-Louis river is one mile wide and three quarters of a mile deep. A landing pier built on the western shore extends in the direction of the eastern point of the bay. It is about 300 feet long and at low water there is about 13 feet at its outer end. At low water drying reefs of rock extend  $1\frac{1}{2}$  cables from shore off the eastern and western points of the bay. A conspicuous cross is erected on the eastern point.



**Leading lights.**—Two *fixed red* lights, visible in line of range, with diamond-shaped daymarks attached, are shown from two white masts located on the eastern bank of the river. In line, bearing S.S.W.  $\frac{1}{4}$  W., they lead into the bay.

**Storm signals** are exhibited from a pole located on the high land back of the pier. There is also a telegraph office in the village. (*See page xlvii.*)

**Anchorage.**—In fine weather there is anchorage in this bay in about 6 fathoms, mud bottom, and with the landing pier bearing W.  $\frac{3}{4}$  S. and the line of lights a little opened to eastward. There is not much room to work out from this anchorage.

**Tides.**—It is high water at full and change at Mont-Louis at 2h. 27m. Springs rise  $9\frac{1}{2}$  feet, neaps rise 7 feet.

**The shore** from pointe du Gros Mâle to Mont-Louis is rocky with cliffs ranging from 50 to 300 feet. The back hills rise to an elevation of nearly 2,000 feet close to the shore line. Those in the valley of Mont-Louis assume peculiar and distinctive shapes.

**Rivière à Pierre bay**, about 3 miles to westward of Mont-Louis bay, is similar to it, and of about the same size. The eastern and western shores of the bay are bold, cliffs nearly 1,000 feet high standing out prominently from seaward. In the bottom of the bay is a fine sand beach, with a small stream near its eastern end. Scattered houses are situated close to the shore line and habitations extend back into the valley for 5 or 6 miles. This bay affords only temporary anchorage and no shelter. Heavy squalls of wind come down in gusts from the valley, and the sea rolls in with both easterly and westerly winds. Drying reefs of slate extend nearly two cables from the western point of the bay.

**A rock shoal**, with 4 fathoms over it at low water, rock bottom, lies N.W. by W. one mile from the western point of rivière à Pierre bay, and 3 cables from shore.

**Rivière à Claude bay.**—A small bay, about 3 miles westward of rivière à Pierre bay shelters boats only. A river flows out near its eastern end.



**Ruisseau Arbour**, a small stream located about 2 miles westward of rivière à Claude. The village is composed of a sawmill and a few houses. Between these two places the shore is rocky with cliffs about 50 feet high, and the dwellings are continuous.

**Marsoui river** is a small stream 5 miles from ruisseau Arbour. A small pier, made of slabs, parallel to the shore, with its outer end to the northwestward has been built on the northern bank of the river. There is 4 feet at low water at its outer end. This pier acts also as breakwater to a small basin, formed by the river at its mouth, in which there remains about 3 feet at low water. Schooners lie aground there while loading. It serves also as a refuge to motor boats travelling along the coast.

**Marten river**, W. by N.  $\frac{1}{2}$  N., 4 miles from Marsoui, is a small stream almost dry at low water. It has a small mill around which are 15 to 20 houses. A church has been erected on the high land west of the river.

**A wharf**, extending to northward and about 100 feet long, is used by scows lightering lumber to vessels anchored in the offing.

**LIGHT** (Lat.  $49^{\circ}-12'-23''$  N., Long.  $66^{\circ}-10'-19''$  W.)—A white light, 130 feet above high water, and giving 4 flashes every 30 seconds, is shown from a red octagonal wooden tower, 63 feet high. There is a red dwelling house nearby. The lighthouse is situated on a cliffy bank which rises gradually from the western side of the river and rather precipitously from the shore line. This lighthouse, on account of its colour and background is not always easily distinguishable from seaward. It can very often be picked up by the church spire almost back of it and 200 feet distant, or by a high chimney about 200 feet to the eastward.

**Fog signal**.—In thick or foggy weather, from a red wooden building near the lighthouse, a diaphone, operated by compressed air, gives one blast of 5 seconds duration every minute.

**Marine signal station**.—There is a telegraph and signal station at the lighthouse. (See page xliv.)



## CHAPTER III

### SOUTH SHORE

#### MARTEN RIVER (RIVIÈRE À LA MARTRE) TO CAP CHAT

**Coast.**—From Marten river (rivière à la Martre), the general direction of the coast is W.  $\frac{3}{4}$  N. for 11 miles to cape Ste. Anne. It is nearly straight with rocky cliffs about 60 feet high. From these extend a narrow strip of comparatively level land, rising to rounded wooded summits, ranging from 1,000 to 2,300 feet in height. About 5 miles from Marten river, there is a perpendicular cliff, nearly 800 feet high with a rounded summit rising to 1,500 feet immediately back. When seen at some 10 or 12 miles east or west, the cliff and the summit, merging into one, stand out prominently. At low water, drying reefs of slate, with a few boulders, extend half a cable from shore.

From cape Ste. Anne to cap Chat, the shore line forms three successive indentations of which the eastern one, Ste. Anne bay, 5 miles wide and three quarters of a mile deep is the largest. At low water, drying reefs extend 3 cables from shore in some parts. Westward of cape Ste. Anne the mountains begin to recede from the shore and to decrease in height, leaving an undulating strip about 3 miles wide, which is very suitable for cultivation.

**The Ste. Anne or Shickshoc mountains** are from 8 to 11 miles inland. These mountains are of remarkable and distinctive shapes. About 17 miles southward of Ste. Anne des Monts village, Mount Albert, probably the highest peak of the range, rises to 3,995 feet above mean sea level.

**Communications.**—A road joins Marten river to cap Chat. For a distance of 7 miles it passes close to or on the beach. Beyond that the road follows close to the shore line and can be used by motor cars.

**Banks of soundings.**—There is no outlying danger between Marten river and cap Chat. Between the former place and cape Ste. Anne the depths increase rapidly from the shore line to the



20-fathom contour running nearly parallel to the shore at an average distance of one half mile. From cape Ste. Anne the distance of the 20-fathom contour off shore increases to one mile off the points, and approaches the shore at cap Chat, where it is barely one quarter mile off. From the 20-fathom contour depths increase to the 100-fathom contour which runs about west and nearly in a straight line. The maximum distance of the 100-fathom contour from shore is  $3\frac{1}{2}$  miles off Ste. Anne des Monts. It is only 2 miles off at cap Chat.

North of Marten river depths increase rapidly to 190 fathoms, and soundings varying from 175 to 190 fathoms extend about 30 miles. Off Ste. Anne des Monts depths increase more slowly to 150 fathoms about 9 miles off, and from here there is a belt of deeper water about 6 miles wide. At this point the submarine plateau, extending from the North shore, is encountered. This plateau has depths of 150 fathoms at its outer edge, and rises gradually to the 100-fathom contour on the North shore.

**Tidal streams.**—From Marten river westward, to about cap au Renard a flood stream is seldom felt, the dominant current being downward and ranging in strength from one half to two knots. From ruisseau Castor westward, in a width gradually increasing to three miles from shore off Ste. Anne des Monts, the tidal streams alternate. Outside of this belt the current is downward. The flood stream, even close to shore, seldom reaches one knot. The downward current off shore varies from one to  $1\frac{1}{2}$  knots.

**Cap au Renard,** W. by N.  $\frac{1}{4}$  N.,  $2\frac{3}{4}$  miles from Marten river lighthouse, is a rocky promontory about 80 feet high projecting into the sea. There is a small stream, rivière Vallée, flowing out of a bight in the shore line about one-half mile to the eastward. There is a small village here.

**Ruisseau Castor,** W.  $\frac{3}{4}$  N., 4 miles from cap au Renard, is a small stream flowing out on the westward side of a rocky promontory, 60 feet high, very similar to cap au Renaud. There is a sawmill here and houses are continuous from here westward.



**A wharf**, about 75 feet long, extends from shore. At low water, a cluster of large boulders to eastward, projecting farther than the wharf, shelters it for small boats.

**Cape Ste. Anne**, a rocky cliff, 55 feet high and projecting seaward, is the eastern point of Ste. Anne bay. A cross has been erected on this point.

The village of Latourelle begins here and extends to the eastward. It derives its name from an isolated rock, about 25 feet high, with its seaward face about 12 feet wide, and standing out conspicuously on the shore below the cape. A church, with a spire, faces the sea. It is built close to the cliffs and about a mile east of cape Ste. Anne and is visible for a long distance in clear weather. There is a sawmill in the bay, immediately east of cape St. Anne. Boats and schooners are built here.

**Ste. Anne bay**, between cape Ste. Anne and Ste. Anne point, is 5 miles long and three quarters of a mile deep. Spread around the bay is the **village of Ste. Anne des Monts**, with a population of 2,172. There is a church with two spires near the inner end of the wharf. There is also a convent, a court house and a telegraph office. A doctor resides in the village. In the eastern half of the bay the shore is rocky, with reefs extending at low water from 2 to 3 cables from shore. The western half of the bay is sandy.

**Government wharf**.—A wharf, 1,540 feet long, extends N.E.  $\frac{1}{2}$  N. from the middle of the bay. It has a depth of 25 feet at low water at its outer face. At 230 feet from the outer end, on both sides of the wharf, there is a depth of 3 fathoms at low water. A rock, with 9 feet at low water, lies 10 feet from the eastern side of the wharf, 360 feet from the outer end. The surrounding depths are 13 feet. The wharf affords shelter on the eastern side from south to north winds. On the western side a ground swell rolls in with strong easterly winds.

A small pier, not connected to the shore, with about 12 feet at low water at the outer end, is situated one quarter of a mile southeastward of the wharf.



**Light.**—A *fixed red* light, 20 feet above high water, is shown from a lantern on a pole near the outer end of the wharf. It is visible from all points of approach 6 miles in clear weather.

**Ste. Anne-des-Monts river**, flowing into Ste. Anne bay, about three quarters of a mile westward of the wharf, can only be entered by small vessels with pilots possessing local knowledge. Towards high water, 13 to 14 feet can be carried in. The channel is narrow and the current swift. On the western side is a training pier about 800 feet long, and on the eastern side is a crib, broken down and in a crumbling condition. A bar of sand and gravel, on which there remains only  $2\frac{1}{2}$  feet over at low water, lies at the mouth of the river, just outside of the pier. There is a bridge across the river, about one quarter of a mile above its mouth. A sawmill operated by the Ste. Anne Lumber Company is located along the western shore, at the entrance of the river.

Vessels loading lumber, usually anchor above the river, in about 9 fathoms, with Ste. Anne church bearing S.E., 8 cables from shore. This is the best anchorage but the holding ground is rather poor.

**Tides.**—It is high water, full and change at Ste. Anne des Monts at 2 hr. 24 min. Springs rise 11 feet, and neaps  $7\frac{1}{2}$  feet.

**LIGHT.**—A *fixed red* light is shown from a lantern on a pole situated near the outer end of the pier on the west side of the mouth of the river. It is visible 7 miles in clear weather.

**Buoy.**—A red wooden spar buoy is moored one cable from the wharf on the edge of the shoal at the mouth of the river.

**Pointe Cap Chat**, W. by N., 4 miles from pointe Ste. Anne is a low rocky spit, surrounded by a reef of rocks extending two to three cables from shore and drying at low water. The northern edge of this reef is bold, depths of 5 fathoms are found within two cables of it. It should be given a wide berth. Under the shelter of the reef, and to eastward of this point, is a fine sandy beach affording good landing for boats in all westerly winds.



**Clearing line.**—A conspicuous hill, close to the shore line, marked "700" feet on the chart, two miles west of the village of Dalibaire, open southward of cap Chat, leads clear of the reef off the point.

**Cap Chat river,** about  $1\frac{1}{2}$  miles southwestward of the point of the same name, flows into a small sandy bay, affording no anchorage. A training pier, about 800 feet long, has been constructed on its western side. At its mouth, beyond the outer end of the pier, are reefs and boulders with but a narrow channel between them. The river can only be entered by small craft. With local knowledge 10 to 11 feet can be carried in.

**Leading lights.**—*Fixed red* lights, from white masts with diamond-shaped daymarks attached are shown at respectively 19 and 39 feet above high water. The front light is about 350 feet from the outer end of the wharf, the back one 290 feet farther. In line they bear S.S.W.  $\frac{3}{4}$  W.

**Buoy.**—A black can buoy marks the reefs at the entrance of the river.

**Cap Chat,** W.  $\frac{1}{4}$  N., 4 miles from pointe Cap Chat, is a conspicuous conical hill rising to about 500 feet. When seen on easterly and westerly bearing it appears detached from the mainland and is easily recognized from distances of 25 miles when the weather is sufficiently clear.

**LIGHT.**—A *white* light, 120 feet above high water and giving one flash *every 3 seconds*, is shown from a white square concrete lighthouse, 33 feet high, situated on the eastern part of cap Chat.

**Fog signal** is made from a white, square, wooden structure, with a gable roof, situated on the edge of the cliff 92 feet above high water and eastward of the lighthouse, when a diaphone sounds *3 blasts of 3 seconds duration every minute*.

**Marine signal station.**—There is a telegraph and signal station at the lighthouse. (*See page xliv.*)



## CHAPTER IV

### SOUTH SHORE

#### CAP CHAT TO MATANE

**Coast.**—From cap Chat to Matane, 34 miles distant, the general trend of the shore is westward. It is straight, bold, of inclined slate and greywacke rocks and of considerable elevation. The Ste. Anne mountains, nearly parallel to the shore line at a distance of about 15 miles inland, continue to their southwestern termination, which is situated at about 18 miles south-eastward of Matane. There are several detached hills farther to westward and at a considerable distance from the river. The Paps of Matane can with difficulty be made out on south-westerly bearings, and on other bearings it is even less easy to distinguish them.

**Banks of soundings.**—From cap Chat to near Matane, the coast is steep-to. There are but two dangers, namely a rock, with 5 feet over it, on the edge of the 10-fathom contour, 2 miles west of Mechin wharf, and the Roix shoal, off Ste. Félicité, about 8 cables off shore, with a least depth of 24 feet at low water.

The 20-fathom contour runs nearly parallel to the shore, keeping about one half mile off to cap Balance. From this point the distance off shore widens to  $1\frac{1}{2}$  miles off Ste. Félicité, and about  $1\frac{1}{4}$  miles off Matane river. Here the 5-fathom contour is about one mile off shore and nearly coincident with the 10 and 20-fathom contours. From cap Chat to cap Mechin, the 100-fathom contour keeps at about  $2\frac{1}{4}$  miles off shore. From Mechin to Matane it runs W.  $\frac{1}{2}$  N., 4 miles from shore. From the 100-fathom line, depths increase rapidly to 175 fathoms and over and are carried close to the north shore.

**Tidal streams and currents.**—From cap Chat to Matane, flood and ebb streams are felt within 2 to 3 miles from shore, with velocities ranging from  $1\frac{1}{2}$  to 2 knots. Beyond this the current is eastward. The ebb stream sets a little toward the shore.

Variation  $25^{\circ} 50'$  W.



**Caution.**—In thick weather, mariners must be cautious not to pass too close to the south. The 100-fathom contour is well defined, and a good limit. Owing to down current, and to the gradual rounding of the coast a vessel altering her course before having run the distance over the ground, will close in on the shore. This fact has been the cause of many groundings off Matane.

**Capucins bay** is a small bay situated W.  $\frac{1}{2}$  S., 5 miles from cap Chat. In the southwestern corner of the bay is a wharf 250 feet long affording shelter to boats. Besides this, there are two other wharves and a small breakwater off the western entrance point. The bay dries out completely at low water and there are large boulders near the bottom of it. St. Paul church, a small inconspicuous chapel, is situated close to the shore on the western point of the bay. There is a sawmill in the bay.

**Cap des Mechins**, W.  $\frac{1}{2}$  S., 9 miles from cap Chat, is a point, 60 feet high, projecting into the sea. It forms the western point of les Petits Mechins, an unimportant indentation of the shore, and the eastern point of les Grands Mechins.

**The village of Dalibaire** is located in the southwestern corner of the bay, where a small stream empties. It contains a church, school, post office and telegraph office.

**Government wharf.**—A wharf extends E.N.E. about 600 feet from the western point of the bay. There is 17 feet at low water at its outer end. Vessels lie only on the southern side of the wharf. It affords good shelter for small craft, excepting from northeast to east winds.

**Light.**—A *fixed red* light, 37 feet above high water, is exhibited from a pole near the outer end of the wharf. It is visible from all points of approach, 7 miles in clear weather.

**A rock**, with 5 feet over it at low water, lies 2 miles from Mechin wharf, about  $3\frac{1}{2}$  cables off shore, on the edge of the 10-fathom contour.



**Les Ilets** is a group of three islets close to shore, 2 miles westward of Mechin wharf. The eastern and largest islet is  $2\frac{1}{2}$  cables long east and west and 12 feet high.

**Ruisseau à Sem** is a small brook, westward  $4\frac{1}{2}$  miles from Mechin wharf. There is a small wharf here and also a mill. A reef of rocks with large boulders, extends two cables from shore, beyond the end of the wharf.

**Grosses Roches**, about 4 miles westward of ruisseau à Sem, is a small village containing a church and sawmill. A reef of rocks with large boulders extends about  $1\frac{1}{2}$  cables from the shore at Grosses Roches.

**Government wharf.**—A small wharf, 354 feet in length, is situated at the mouth of ruisseau à la Loutre. It has a depth of 3 feet at its outer end at low water.

**Cap Balance**, W.  $\frac{1}{2}$  N.,  $4\frac{1}{4}$  miles from Grosses Roches, is a prominent cape about 250 feet high. It is bold and steep-to. Cliffs about 70 feet high extend from Grosses Roches to cap Balance.

**Ste. Félicité**, 3 miles westward of cap Balance, is a small village containing a church with a spire.

**Government wharf.**—A wharf, just west of the church, extends in a northerly direction about 530 feet from the shore. It has a depth of 5 feet at its outer end at low water.

**Fog signal.**—From a white rectangular building situated on the extremity of the low point projecting from the general trend of the coast,  $1\frac{3}{10}$  miles west of Ste. Félicité church, a diaphone, at a height of 15 feet above high water, gives a blast of  $3\frac{1}{2}$  seconds duration *every minute*.

**Roix shoal** lies with Ste. Félicité church bearing S.S.W. distant 9 cables. It is a rock about 500 feet long east and west and 400 feet broad, with a depth of 4 fathoms over it at low water springs, and 7 or 8 fathoms shorewards. The sea seldom breaks on the rock, but there is often a heavy curl on it. Another rock, with the same depth over it, lies one half mile to south-



westward of Roix shoal. A 6-fathom spot on the edge of the 20-fathom contour lies with Ste. Félicité church bearing S.E. by S.  $1\frac{1}{2}$  miles distant.

**The shore**, between cap Balance and Ste. Félicité, is fringed with reefs of slate extending about 2 cables from shore at low water. From Ste. Félicité point the shore trends westward  $3\frac{1}{2}$  miles to a small stream, Little Matane river, where is located a small village. From here the shore line trends W. by N.  $3\frac{1}{2}$  miles to Matane river. Between Ste. Félicité and Matane there are continuous clay cliffs, 50 to 60 feet in height, and the shore line is fringed with slate reefs. These reefs extend from 1 to 2 cables off shore until  $1\frac{1}{2}$  miles east of Matane river. From here sand and mud flats extend at low water.

**The mouth of the Matane river** is W.  $\frac{1}{2}$  N., 11 miles from cap Balance. The river flows through a narrow channel between sand and gravel banks. The tide ascends about one mile up the river, the limit of tidal influence being a rapids over a ledge of rocks. Above this point the stream is swift, shallow and only navigable for canoes. In bad weather, landing in a boat at this river is very dangerous at low water, on account of the heavy surf on the sand banks at the entrance.

**Two breakwaters**, or training piers, have been erected at the entrance. One of these breakwaters on the eastern side of the river is 500 feet long and runs nearly north, while the other on the western bank is 450 feet in length and runs N.N.W.

**Sand banks**.—A sand and gravel bank extends three quarters of a cable in the same direction from the end of the western breakwater. A similar bank extends N. by E.,  $1\frac{1}{2}$  cables from the extremity of the eastern breakwater. The distance between these two shoal banks is about  $7\frac{1}{2}$  cables. One and one half cables from the eastern breakwater a semi-circular bank, just awash at low water springs, lies about midway in the channel. This bank continually shifts from the effects of gales. A sand and gravel bank extends eastward from the inner end of the western breakwater and decreases the width of the passage to about one half cable.

Variation  $24^{\circ} 50'$  W.



**Wharves.**—Inside this entrance and on the western side of the river bank a Government wharf, extending north, has been constructed. Along the outer half are depths of 2 to 3 feet at low water. There are also lumber wharves built farther upstream, where it is practically dry at low water with a good bottom of mud and stones.

**Leading lights.**—Two *red* lights in line bearing S.  $\frac{3}{4}$  W., lead into the river. The front light, at a height of 26 feet above high water, is shown from a pole, with a white diamond-shaped daymark attached, on the outer end of the Government wharf, and the rear light, at a height of 37 feet above high water, from a white wooden framework beacon with square daymark, 120 yards back of the front light, visible in line of range.

**LIGHT.**—From a white cylindrical concrete tower, with red lantern, 67 feet high, erected on the west shore of the entrance to Matane river, is exhibited at a height of 85 feet above high water, a *group flashing white* light, giving 2 flashes every  $7\frac{1}{2}$  seconds, thus, flash  $\frac{1}{2}$  sec., eclipse 1 sec., flash  $\frac{1}{2}$  sec., eclipse  $5\frac{1}{2}$  secs. It is visible from all points of approach by water.

**Marine signal station.**—There is a telegraph and signal station at the lighthouse. (See page xlv.)

**Light-and-bell buoy.**—A black cylindrical light-and-bell buoy, No. 21 B, is moored in 10 fathoms on the outer edge of the shoal off the mouth of Matane river, about one mile northward of Matane lighthouse, and exhibits an *occulting white* light. The bell is rung by the action of the waves on the buoy.

**Buoys.**—Suitable buoys are placed from time to time to mark the entrance of the river.

**Supplies** of provisions can be obtained at Matane.

**Anchorage.**—There is anchorage outside the bar in 5 fathoms, about half a mile off shore, and in 10 fathoms a little farther out, the bottom being sand and clay.

**Tides.**—High and low waters occur at Matane river, 4 minutes earlier than at Father point. Springs rise  $12\frac{3}{4}$  feet and



neaps  $8\frac{3}{4}$  feet. The rise of the tide is irregular, easterly winds raise the water and westerly winds lower it. A tidal stream sets toward the shore near Matane.

**St. Jérôme de Matane**, is the name of the seigniory which contains 1,558 inhabitants most of whom live by means of combined fishing and farming. The soil is good. The village contains several sawmills, a grist mill, a spool-wood factory and a large stone church.

**Matane** is the terminus of the Canada and Gulf Terminal Railway which connects a portion of this district with the Canadian National Railway at Mont Joli station.

Variation  $24^{\circ} 50'$  W.



## CHAPTER V.

### SOUTH SHORE

#### MATANE TO FATHER POINT

**The coast** from Matane trends generally W.  $\frac{1}{4}$  S., 22 $\frac{1}{2}$  miles to Métis point, and 43 miles to Father point. It is low, rocky and wooded and rises in easy slopes to the back range of hills. It is continuously inhabited and cultivated. Between Matane and Métis bay are two hills, about 4 $\frac{1}{2}$  miles apart, and 2 miles from shore, rising to 600 feet, from comparatively level ground. They are easily recognized. Back of Métis bay, 3 $\frac{1}{2}$  miles from shore, hills rise to 1,500 feet and to the westward there are isolated hills 300 feet in height and 2 miles from shore.

**Mont Camille**, a prominent hill 2,036 feet high, lies 10 miles southeast of Father point.

**Banks of soundings.**—The 20-fathom contour is one mile from shore at Matane, 2 $\frac{1}{2}$  miles off Métis point and 3 $\frac{1}{2}$  miles off Father point. The 100-fathom contour is 3 $\frac{1}{2}$  miles off at Matane, 6 miles off at Métis and 6 $\frac{3}{4}$  miles off at Father point. As the banks of soundings gradually become wider to westward, the shore, between Matane and Father point, can be approached with caution by the use of the lead. Between the 100-fathom contour of the south shore and that of the north shore, there is a channel of deep water, nearly 14 miles wide. The depths range from 160 to 212 fathoms.

**Tidal streams.**—Both ebb and flood, with a velocity ranging from one-half to 1 $\frac{1}{2}$  knots, are felt at a distance of two to three miles off shore. Beyond this distance from shore the current is generally constantly eastward to within a few miles of the north shore.

**Rivière Blanche**, W.  $\frac{1}{2}$  S., 7 miles from Matane lighthouse, has a church, large stores, a creamery and a sawmill.

**Government wharf.**—A wharf, T-shaped, extends 458 feet from shore in a northerly direction. It is nearly dry at low



water and there are several large boulders off the outer end. The outermost one of these boulders, lying 2 cables due north from the outer end of the pier, dries 8 feet.

A small river, affording shelter for small boats, empties to the eastward of the wharf.

**Light.**—On the outer end of the wharf at rivière Blanche a *fixed* light, *white with red sector*, is shown from a pole erected on a white shed. The light is visible upstream only.

**Shore.**—From Matane, there is a fine sandy beach for a distance of about 4 miles. For the remainder of the distance to Father point the shore line is fringed with reefs of slate, extending over two cables at low water. These reefs are covered with boulders. Pte. au Naufrage, a low point,  $3\frac{1}{2}$  miles westward of rivière Blanche, forms the eastern point of a small bay into which a small stream, the river Tartigou, empties. At the mouth of the river there are a few houses grouped around a mill.

**Sandy bay**, a small village  $5\frac{1}{2}$  miles westward of pointe au Naufrage, has a conspicuous stone church with a high spire. The church, built close to shore, faces seaward. The water tank of the Canada and Gulf Terminal Railway is a very conspicuous mark, which is built on the bank at a height of 100 feet above the sea level.

**Métis point**, low and wooded, forms the western point of Little Métis bay. There are several buildings and a fishing establishment on Métis point.

**Reef.**—Rocks and foul ground extend about one half mile northwestward of the point. A reef, bold on its northern side, extends nearly three quarters of a mile northwestward of the point.

**LIGHT.** (*Lat.  $48^{\circ}-40'-54''$  N., Long.  $68^{\circ}-02'-15''$  W.*).—A. *white group flashing* light giving 3 flashes every  $7\frac{1}{2}$  secs., thus: 3 flashes of *one-quarter second* each; eclipse between flashes *one second*; between groups  $4\frac{3}{4}$  secs.; is shown at a height of 79 feet above high water, from a white, cylindrical, concrete tower on Métis point. The light is visible 14 miles in clear weather.



**Fog signal.**—A diaphone, sounding 3 blasts every minute, thus; blast 2 secs.; silence 5 secs.; blast 2 secs.; silence 5 secs.; blast 4 secs.; silence 42 secs., is made from a white, square building situated 40 feet north of the lighthouse.

**Marine signal station.**—There is a telegraph and signal station at the lighthouse. (*See page xlv.*)

**Little Métis bay** is small and divided into two rocky coves, open to the northeastward and dry at low water.

**Little Métis river** is a small stream which flows into the head of the southern cove.

**Little Métis** is a summer resort with several large hotels and numerous cottages. It is a station on the Canada and Gulf Terminal Railway. Round Rock (Les Boules), about 2 miles eastward of Little Métis river and about  $2\frac{1}{2}$  cables from shore is a conspicuous, bare, round islet, 45 feet high with smaller rocks on both sides of it.

**Anchorage.**—Small vessels anchor midway between the eastern reef off Métis point and Round Rock, in 3 fathoms, mud bottom, with the wind as far northward as northwest. Large vessels anchor farther out in 5 to 6 fathoms of water, but not in the stream of the reef where the ground is foul and rocky.

**Round Rock**, bearing S.E. leads clear of the eastern end of the reef, but with a vessel of moderate draught, do not bring the Rock eastward of S.S.E. This end of the reef should not be closed to less than 5 fathoms.

**Senelles point** is a cliff about 60 feet high, 5 miles westward of Métis lighthouse. It forms the western point of Métis bay, which is separated from Little Métis bay by Métis point. Métis bay is 3 miles wide and three quarters of a mile deep, but at low water it dries out nearly in a line with its point.

**Métis river** flows into Métis bay near its western corner. A round islet, about 30 feet high, lies about 3 cables off the mouth of the river. About 2 miles upstream, in a valley between two



hills, is the village of Priceville, in which a church and sawmill are the principal buildings. The smoke emitted from the burner of this mill is very conspicuous from seaward.

The village of St. Octave de Métis, a station on the Canadian National Railway, is situated 2 miles eastward of Priceville. It has a church on high land which is a conspicuous mark.

**Anchorage.**—Small vessels anchor in  $3\frac{1}{2}$  or 4 fathoms, under Métis point and close to the edge of shoal water. Although there is no shelter, vessels load lumber here all through the summer, and usually moor in 6 fathoms at low water, mud bottom, with the river entrance S.S.W.  $\frac{1}{4}$  W., distant  $1\frac{1}{2}$  miles. Strong northerly winds seldom occur before September, after which the anchorage is dangerous. At other times, with fine weather, vessels anchor anywhere off the bay, in 6 to 12 fathoms, with good bottom, and plenty of room to get under way.

**Ste. Flavie** is a village close to the shore,  $2\frac{1}{4}$  miles westward of Senelles point. It has a church with spire. Two and a quarter miles back from the shore is the village of Mont Joli, a divisional point on the Canadian National Railway. It has a church with spire. One mile further is the village and the church of St. Joseph de Lepage. The land gradually rises from the shore. These three spires are very nearly in one, and bear S.S.E.

**Cock point**, W.  $\frac{3}{4}$  S.,  $10\frac{3}{4}$  miles from Senelles point, is low, and forms the western point of a small indentation of the shore. On this point is the village of Ste. Luce, which has a church, grist mill and sawmill. A small stream flows into the western corner of the bay.

**Government wharf.**—A wharf, about 400 feet long, extends in a southeasterly direction from Cock point. It dries 4 feet at low water.

East of the church at Ste. Luce a small wharf extends out about 250 feet from the shoreline in a southeasterly direction, the outer end of which dries at low tide.



Between Senelles and Cock points, the shore is gravel and fringed by reefs of slate extending 2 cables at low water.

**Light-buoy.**—A black cylindrical light-buoy, No. 25B, moored in 7 fathoms of water 6 cables northward of Cock point exhibits an *occulting white* light.

*(For continuation South shore see page 51.)*

Variation 24° 00' W.



## CHAPTER VI

### NORTH SHORE

#### SEVEN ISLANDS TO PENTECOTE RIVER

**Boule bay** is situated between Moisie shoal and pointe aux Basques, about  $8\frac{1}{2}$  miles westward. A fine, broad, sandy beach extends the whole length of the bay.

**Pointe aux Basques**, is a low but decided point of land forming the eastern entrance point of Seven Islands bay.

**East rocks** which are low, bare of trees and portions of which are always above water lie in Boule bay at about  $6\frac{1}{2}$  miles westward from Moisie point, and they are out of the way of sailing vessels which should not stand into this embayed place, since there is generally a heavy southerly swell rolling in and it would be difficult to beat out.

**Seven islands** are high and steep, of primary rocks, very thinly wooded, and are unlike any other islands in the gulf. The islands are six in number, with also East and West rocks, but the peninsula forming the western entrance point of Seven islands bay appears as an island from a distance seaward, being 730 feet high, which is higher than any of the islands.

**Little Boule island**,  $1\frac{7}{10}$  miles westward of East rocks, about the same distance southward of the mainland, is circular in shape, about 8 cables across and 433 feet in height. Schooners find some shelter from westerly winds by anchoring off the northeast side of the island.

**Great Boule island**,  $1\frac{1}{2}$  cables southward of Little Boule, is  $2\frac{1}{10}$  miles long, northeast and southwest, 3 cables to  $1\frac{1}{4}$  miles wide, and 688 feet high.

**Shoal.** In the narrowest part of the narrow passage between Great and Little Boule islands and distant over half a cable from Little Boule is a rocky shoal with  $2\frac{1}{2}$  fathoms over it and surrounded by depths of 7 fathoms. The tidal streams in this

Variation  $25^{\circ}$  W. to  $29^{\circ}$  W.



passage are rather strong, the flood setting westward and the ebb eastward and it is subject to sudden and baffling flaws of wind. The passage should not be attempted.

**St. Olaf reef** is the name of the boulder strewn spit on the eastern side of Great Boule island about 4 cables from the northern end. The reef was so named because of its being the scene of the disastrous wreck of the SS. *St. Olaf* which came to grief in a dense snow storm when making for shelter in Seven Islands bay.

**Anchorage.**—Small craft find shelter from south and easterly winds by anchoring off the northwest side of Great Boule island, with the unnamed point which projects about midway along that coast bearing southwest and distant about 3 cables.

**Great Basque island**, separated from pointe aux Basques by East Channel, and  $1\frac{7}{10}$  miles westward of Little Boule island is 2 miles long north and south, one mile wide, and 500 feet high. On the western side of the island are several shoals of less than 6 feet close inside the 10-fathom contour.

**BASQUE REEF** is the name of a dangerous, rocky shoal lying near the middle of the passage between Great Basque island the pointe aux Basques. The reef, lying in a W.N.W. and E.S.E. direction, is 3 cables long, narrow and disjointed. The highest and western end of the reef dries 9 feet at low water and lies W.  $\frac{1}{2}$  S., distant one half mile from pointe aux Basques. Another spot lying 2 cables E.S.E. from the 9 foot spot dries 2 feet at low water. Between these two and eastward one cable of the latter are several spots with less than 6 feet over them.

**Little Basque island**, close southward of Great Basque island, is  $1\frac{2}{10}$  miles long northwest and southeast, about half a mile broad near its northern end and tapers to a point at its southern end.

**The passage** between Little Basque island and the narrow rock peninsula which forms the southern extreme of Great



Basque island is only 400 feet wide. In the middle of the passage is a depth of 11 feet. The tidal streams are rather strong.

**Manowin island**, extending  $1\frac{7}{10}$  miles N.W. by N. and S.E. by S. and about half a mile wide, lies W. by S. of Little Basque island. It is 457 feet high.

**Carrousel island**, about a mile long W.N.W. and E.S.E. and half a mile wide, lies southward of Manowin island, and is separated from it by a narrow passage a few yards wide and 3 feet deep. The height of the island is about 260 feet.

**Rocks.**—In the bay lying between the eastern extremes of Manowin and Carrousel islands is a rock which just covers at high tides. It lies  $1\frac{1}{2}$  cables from shore and from the centre of the narrow passage between the island bears E. by S.  $\frac{3}{4}$  S., distant  $2\frac{1}{4}$  cables. Several shoal spots lie between this rock and the shore.

**LIGHT** (Lat.  $50^{\circ}-05'-20''$  N., Long.  $66^{\circ}-22'-45''$  W.).—From a square lighthouse on Carrousel island, 39 feet high, with dwelling attached, and painted white with red horizontal band, is exhibited at a height of 190 feet above high water, a *flashing white* light, showing one flash every 10 seconds, thus: for half the time between flashes the light is totally eclipsed, for the other half a fixed light of 500 candle power is visible through which the flashes of 50,000 candlepower is shown. The light is visible 20 miles. There is no telephonic or telegraphic connection between the lighthouse and the mainland.

**Fog Signal.**—In thick or foggy weather, from a white rectangular wood building near the lighthouse, a diaphone, operated by compressed air, gives *one blast of 5 seconds' duration every 90 seconds*.

**West Rocks**, between Manowin island and the peninsula which forms the western entrance point of Seven islands bay, are small and low.



**The narrow pass** between Manowin island and West rocks is rendered intricate by rocks which nearly cover at high water, and the tidal streams set strongly towards and through it; the flood westward and the ebb eastward.

**SEVEN ISLANDS BAY**, is  $2\frac{3}{4}$  miles wide at the entrance between pointe à la Chasse and pointe aux Basques; the bay thence extends about 6 miles northward and westward, with a deep water space about 3 miles wide, and it is nearly landlocked, being completely sheltered from seaward by Seven islands; the bottom is clay, and there are no shoals, excepting the mudbanks, which fill up the northern part of the bay.

A fine, broad sandy beach extends 3 miles north-northwestward from pointe aux Basques to the entrance of Old Fort river, and is steep-to to depths from 12 to 6 fathoms for over a mile, whence the 3-fathom contour trends gradually more to the westward across the bay.

**Aspect.**—With the exception of the low flat land between the Moisie river and Seven Islands bay the country drained by the rivers Moisie and Margaret is rugged and deeply ravined. The typical hill ranges of the North shore lie in roughly parallel ridges, the summits of which attain elevations of 1,300 to 1,800 feet 4 to 8 miles inland. These mountains, the high peninsula, the bold and hilly islands, and the other features around the bay, form a scene of great beauty.

**Anchorage.**—The best anchorage berth in Seven islands bay for a sailing vessel of large draught is in 9 fathoms, clay bottom, with pointe aux Basques and the northern side of Little Boule island in line, and pointe au Corbeau in line with the western side of West rocks. From this position the sandy beach to the eastward is distant nearly one mile, and the 3-fathom edge of the shoals, which occupy the northern part of the bay, is distant three quarters of a mile. Smaller vessels anchor in 6 fathoms at about 3 cables nearer inshore, which is as near as any vessel should anchor.

The swell in this anchorage with a strong southerly wind is considerable, but not enough to endanger a vessel, although suffi-



cient to prevent boats from landing on the beach. The anchorage in 13 fathoms soft clay in the southwestern part of the bay is smooth and quite landlocked.

**Seven Islands village**, comprising about 200 buildings, extends about a mile along the east side of the bay; there is a large church in the centre of the village, a telegraph office, post-office, bank, custom house and several general stores. The Hudson's Bay post, surrounded by the habitations of the Indians is located at the northern end of the village. The principal industries are the fur and fish trades. In 1921 the resident population was 614.

**Communication.**—There is weekly steamboat service with Quebec during the season of navigation, and schooners make frequent connection with the south shore.

**Government wharf.**—A wharf at Seven Islands extends 440 feet from the shore directly in front of the church. There is about 9 feet of water at its outer end at low water springs. Vessels lie along either side of the wharf. It is provided with a slip.

**Light.**—On the outer end of the wharf at Seven islands is shown from a pole attached to a small white building, a *fixed white* light.

**Storm signal.**—The Canadian Meteorological Service maintains a storm signal station at Seven Islands. (*See page xlvii.*)

**Clarke City**,  $3\frac{1}{2}$  miles up the St. Margaret river, and the same distance from the western shore of Seven Islands bay, is a pulp manufacturing centre containing extensive mills of the Gulf Pulp and Paper Company, the product of which is exported to European markets. A railway connects the mills with the wharf at pointe Noire, about 9 miles distant, where the pulp is loaded aboard vessels. The population of Clarke City is about 1,500. A telegraph office is located in the large general store in the village.



**Wireless station.**—The Canadian Government maintains a wireless station at Clarke City, call letters VCK, open to the public at all hours of the day and night during the season of navigation. (See page xxxviii.)

**Government wharf.**—From pointe Noire, a wharf 1,200 feet long, extends in an E.  $\frac{1}{2}$  S. direction. Along the northern side of the wharf, where ocean vessels lie, the depths diminish from 26 feet at the outer end to 12 feet, 350 feet shorewards. Along the southern side, available for smaller vessels, the depths diminish to 12 feet, 300 feet shorewards. Railway tracks are laid on the wharf and the company operates modern loading devices.

**Water.**—Fresh water is delivered to vessels from a pipe on the wharf.

**Communication.**—A vessel of the Clarke Steamship Company from Quebec calls here weekly during the season.

**Bank.**—Parallel to the north side of the wharf, at a distance about 100 feet off, is the southern edge of a mud and clay bank that has its summit in a 5-foot spot, 850 feet N.N.W.  $\frac{3}{4}$  W. from the outer end of the wharf. To avoid this bank, vessels when leaving the wharf should go well astern before attempting to turn.

**Light.**—On the outer end of the wharf at pointe Noire, at a height of 23 feet above high water, is exhibited from a post above a white shed a *fixed white light*.

The peninsula bounding the south of Seven Islands bay is high and rugged.

**Pointe à la Marmite**,  $1\frac{9}{10}$  miles eastward of pointe Noire forms the southern entrance point of Seven Islands bay. Reefs of rock, drying at low water extend one cable eastward of the point. Shoal water extends off the north side of the point, the 3-fathom contour being 2 cables off, with depths of only 9 feet immediately inside that contour.

**Boat cove.**—A small indentation in the coast immediately south of the point forms an excellent boat cove. It should be



entered close along the northern or southern shore in order to avoid two boulders in the centre of the entrance which dry about 5 feet at low water.

**Pointe au Corbeau** is the name of the point three quarters of a mile southward of pointe à la Marmite. There is deep water close off the point.

**Pointe à la Chasse** is the prominent southeastern extreme of the peninsula. An outcrop of bare rock, 375 feet high, a third of a mile inland from the point is conspicuous.

**Rocks.**—A high rock reef, isolated from the shore at high water lies 500 feet off pointe à la Chasse. Another rock, showing only at low water, lies 150 feet seaward of the former.

**Shore.**—Between pointe au Corbeau and pointe à la Chasse a bay is formed, half a mile deep between the containing points. The rocky shore of the bay is fronted by isolated drying reefs of rock, extending in places 2 cables off shore.

**Magnetic variation**, between pointe à la Chasse and Moisie river varies from 25° to 29° W.

**Seven islands bay approach.**—**East channel**, between Great Basque island and pointe aux Basques is 5½ cables wide. Basque reef, above described, lying in the middle of the channel, renders the channel dangerous to navigation. The passages on both sides of the reef are 2 cables wide and deep.

**Middle channel**, between Basque islands on the east, and Carrousel, Manowin, West rocks, and the peninsula forming the western entrance point of Seven Islands bay on the west, is the best channel, being 1¼ miles wide, and clear and deep to half a cable off the shore, excepting at points à la Marmite, close northward of points au Corbeau, off which a reef extends 1¼ cables. It is preferable for sailing vessels in all winds excepting northerly and northwesterly with which winds it might be desirable to enter by West channel.



**West channel**, between West rocks and pointe à la Chasse, the southern end of the peninsula, is three quarters of a mile wide, clear and deep; a group of rocks however, lie one cable northward of West rocks, but they always show except in very high tides and the smoothest sea. Therefore, do not approach West rocks nearer than 2 cables; the peninsula side is bold. Caution is necessary here during the ebb or east-going stream, which, being turned off by pointe à la Chasse, sets towards West rocks.

**Directions.**—East channel is approached from between Boule islands and East rocks, or from between Boule and Basque islands both routes being clear and deep.

In going through East channel, which in a sailing vessel should not be attempted without a fair wind, keep one cable either from Great Basque island or from pointe aux Basques; the later is preferable.

In Middle and West channels simply give the shore a berth of 2 cables in every part.

The water is too deep for anchoring in the channels, and the bottom is generally rock, except eastward and northward of Boule islands. The ground is not fit for anchoring until well into Seven Islands bay. The water is very deep outside these islands, which are so bold that they may be approached closely.

**Tides.**—It is high water, full and change, at Seven Islands at 2h. 6m.; springs rise  $10\frac{1}{2}$  feet, neaps rise  $7\frac{1}{4}$  feet, neap range 4 feet. The rate of the tidal streams in the bay, and in the principal channels between Seven islands, seldom reaches one knot, but in the narrow channels between Boule islands, Basque islands, and in East and West channels, it reaches 2 knots at springs, or even more in the narrowest of these channels when accelerated by strong winds. The flood setting westward strikes Boule islands, and passes around and between them and Basque islands. That portion which passes southward of Great Boule island turns towards Carrousel island and West channel; the greater part of the stream, which passes within Boule islands, enters Seven Islands bay by East channel. There is very little flood stream in Middle channel, excepting an eddy setting out-



ward or southwestward close along the southeastern coast of the peninsula, and the narrow stream from between Basque islands, which sets across towards West channel.

The ebb stream sets fairly out of Seven Islands bay, part of it by East channel and part of it by Middle channel, where it meets the east-going stream through West channel, which turns it to the eastward, past and southward of Basque and Boule islands.

**Winds.**—In fine nights the wind is almost always light and baffling between Seven islands, particularly if it is westerly in the offing. There is then generally a northerly land wind in Seven Islands bay, but it seldom reaches out among the islands in the early part of the night, although it often does towards the morning.

**The coast** between pointe à la Chasse and pointe des Monts, 62 miles S.W. by W.  $\frac{5}{8}$  W. is of very moderate height, the country near the sea being small and low granitic hills, partially wooded with spruce trees. Marshes and ponds are frequent between the hills; sandy beaches occur occasionally, and the sandy tracts in rear of them are always the most densely wooded parts. The higher hills are, generally, far inland.

There are no detached dangers off this coast, which is much bolder than its appearance indicates, and although the water is deep off every point of it, yet, with few exceptions, deep-sea soundings give warning of approach to the land.

**St. Margaret bay.**—St. Margaret point bears W.  $\frac{1}{4}$  N.,  $12\frac{1}{2}$  miles from pointe à la Chasse, and St. Margaret bay, lying between, is clear of shoals. The water deepens gradually outside St. Margaret river bar, with sand bottom, to 18 fathoms at one mile from the 3-fathom contour. There is a sandy beach for a considerable distance on either side of the mouth of the river.

**St. Margaret river,** flows into St. Margaret bay at 6 miles N.W. by W.  $\frac{1}{2}$  W. from pointe à la Chasse, and although a large stream, it affords shelter to boats only. A bar of sand extends three quarters of a mile seaward from the entrance, and there

Variation  $26^{\circ} 40'$  W.



are several small channels through it, only 3 feet deep. Immediately within the entrance which is  $1\frac{3}{4}$  cables wide, the water is 6 feet deep, but only 3 feet can be carried up to the low falls, which are over granitic rocks at  $3\frac{1}{4}$  miles within the entrance. Below the falls the river flows between cliffs of sand and clay, and is full of sand bars, dry at low water.

**St. Margaret point** is rocky, of moderate height, and has a round hill a short distance within it. Several rocks, which cover at high water, extend nearly one third of a mile off this point. These rocks are very bold and at  $1\frac{1}{2}$  miles outside of them there is no bottom at 70 fathoms.

**The coast** between St. Margaret point and Great Cawee island,  $15\frac{1}{2}$  miles S.W. by W.  $\frac{3}{4}$  W. from St. Margaret point, is low and fringed with small islets; it may, with caution, be closely approached by the lead, but the depth of 20 fathoms is near enough to it in ordinary navigation.

The deep sea soundings are very irregular off this coast; in some parts there is a depth of 50 fathoms at 4 to 5 miles off shore, on other parts, as off May islets at  $5\frac{1}{2}$  miles north-westward of Great Cawee island there is no bottom at 60 fathoms within two miles of the rocks.

**Shelter bay, Rock river.**—Shelter bay is situated at the mouth of Rock river, 5 miles W. by N.  $\frac{1}{4}$  N. from St. Margaret point. A modern pulp wood mill is located here, the product of which is shipped to inland ports.

**A wharf**, with a depth of 18 feet along its northern side extends from the shore at Shelter bay. Pulp wood is loaded mechanically into vessels alongside.

**Leading lights.**—Privately maintained leading lights mark the line of approach to the wharf. The front light is suspended from a white pole on the outer end of the wharf, and the back light from a similar pole 2,200 feet from the front light. In line they bear N. by E.  $\frac{1}{8}$  E.

**Shoals.**—The soundings off Shelter bay are irregular; a 17-foot spot lies 3,800 feet from the wharf and 1,200 feet east-



ward of the line of range; a 16-foot spot lies 2,700 feet from the wharf and 800 feet eastward of the line of range; a 12-foot spot lies 1,200 from the wharf and 900 feet eastward of the range; a 17-foot spot lies 1,050 feet from the end of the wharf and 450 feet eastward of the line of range; a 22-foot spot lies 2,100 feet from the end of the wharf and 500 feet westward of the line of range; a 14-foot spot, marked by a privately maintained black barrel buoy, lies 450 feet from the end of the wharf and 500 feet eastward of the line of range. Numerous other spots occur within the 5-fathom contour farther from the line of range.

**May islets—Light.**—A *fixed white* light is shown, at a height of 54 feet above high water, from a white, square building surmounted by an octagonal lantern, 22 feet from the ground, erected on the easternmost islet.

**Cawee islands**, are two hilly, grey granite islands, nearly bare of trees. Great Cawee island, the larger and higher, is triangular in shape, each side being about 7 cables long, and about 250 feet high. Little Cawee island, lying  $1\frac{1}{4}$  miles farther southwestward, is nearly 3 cables long northeast and southwest, and one cable wide; there are several rocks above water close off it to the southwest, and a reef extends nearly 2 cables northward of its western part.

An islet, about a cable across, lies about a cable northeastward of this island.

**Water.**—There is neither wood nor water in Cawee islands, but both can be obtained from the mainland.

**Cawee rock**, 3 cables southward of the southern point of Great Cawee island, is small, round, high, and steep-to.

**Great Cawee cove**, on the northern side of Great Cawee island is secure for boats, with plenty of water, but its entrance is too narrow for vessels.

**Great Cawee shoal**,  $2\frac{1}{2}$  cables northward of the mouth of the cove, has a depth of 15 feet water over it, and from the

Variation  $26^{\circ} 40'$  W.



shoal, the northern end of the island, situated at the entrance of the cove, is in line with the point of the mainland to the southwestward.

**Cawee ledge**, N.E.  $\frac{3}{4}$  N., half a mile from Great Cawee shoal, and 3 cables off the mainland, is small, round, and awash at low water. From the ledge, the southern side of Large rocks is in line with the point of the mainland to the southwestward.

**Rock**.—A small rock above water lies north, distant 3 cables from Great Cawee shoal and about  $1\frac{1}{2}$  cables off the mainland.

**Large rocks**,  $2\frac{1}{2}$  cables westward from the island at the entrance of Great Cawee cove, and  $1\frac{1}{2}$  cables from the mainland, are two large rocks close together; a reef extends southwestward 2 cables from their southwestern point.

**Anchorage**.—There is anchorage in the mouth of the bay on the northwestern side of Great Cawee island in 7 fathoms, mud bottom, at one cable from the island. It is sheltered with winds from W. by S., through north, to N.E., and tolerably so with easterly winds, although some swell rolls round the island, but southwesterly winds blow right in, and send in a very heavy sea.

**Directions**.—For this anchorage from the eastward, pass half a mile northward of Great Cawee island, to avoid Great Cawee shoal, until the point of the mainland to the westward, bearing about W. by S.  $\frac{1}{4}$  S., is midway between the northern side of the island at the entrance of Great Cawee cove and Large rocks. Keep this mark on until between Large rocks and the island, when haul into the mouth of the small bay on the northwestern side of Great Cawee island, and anchor in 7 fathoms. There are about 12 fathoms in the middle of the channel, and upwards of 9 fathoms can be carried through, but the depths are irregular.

From the westward, pass between Little Cawee island and the mainland by keeping in mid-channel, but it is better to run between Little and Great Cawee islands, hauling close round the western point of the latter into the anchorage. This route is clear, excepting for Cawee rock, which is always visible.



But this is a very dangerous and intricate place, and the anchorage between Great Cawee island and the main is too small for large vessels, being only 2 cables wide. It may, however, be used as an occasional place of shelter for small vessels, and even as a place of refuge for a large vessel in distress, for the ground is so good that a vessel well moored there might ride out a summer gale.

**Tides.**—It is high water, full and change, at Cawee islands, at 2h. 12m.; springs rise  $10\frac{1}{2}$  feet, neaps  $7\frac{1}{2}$  feet. The tidal streams run fair through between the islands and the mainland, the flood setting southwestward, and the ebb northeastward, at a rate which seldom exceeds  $1\frac{1}{2}$  knots, and which is generally much less.

**Point Sproule** of the mainland lies northwestward three quarters of a mile from Little Cawee island. Reefs extend off it one cable towards Little Cawee island, and 4 cables southwestward.

**Lobster bay** is between pointe Sproule and Crooked islands, which are a group of small islets and rocks extending three quarters of a mile from the shore at 3 miles southwestward of point Sproule, and bold to the southward and eastward. Shallow water extends about 4 cables off the northwestern side of the bay, and its northeastern part or head is occupied by an extensive flat of sand and boulders, dry at low water. The bay is an excellent open roadstead, with plenty of room for large vessels.

There is anchorage in the bay midway between the reef off point Sproule and Crooked islands in 12 fathoms at  $1\frac{1}{2}$  miles, to 5 fathoms at half a mile, distant from the 3 fathoms edge of the flats in the head of the bay. The bottom is fine sand over clay, and the bay is sheltered, except from winds between east, through south, and southwest, which blow right in with a heavy sea and thick weather.

Variation  $26^{\circ} 40'$  W.



## CHAPTER VII

### NORTH SHORE

#### PENTECOTE RIVER TO POINTE DES MONTS

From Pentecôte river to Pointe des Monts the shore is generally low and wooded close to the high water line. The hills back of the shore are very similar in shape. Their greatest elevations are from 900 to 1,240 feet. With the exception of the Egg island group of islands and reefs, the shore is clean from Pentecôte river to Caribou islets, 17 miles southward, from whence the shore line is more broken with outlying reefs, and a vessel should not get closer than the 20-fathom contour, which is about  $1\frac{1}{4}$  miles from the shore, without local knowledge.

**Pentecôte river**,  $1\frac{1}{2}$  miles southwestward of Crooked islands, flows into the St. Lawrence between a rocky point on its eastern side, and a sandy point on its southern side. There is a conspicuous, round, wooded hill about two miles southward of the river. The first stretch of the river is towards this hill, leaving a narrow sandy ridge between it and the sea. Steep cliffs of sand and clay form the banks for  $2\frac{1}{2}$  miles, for which distance only, the river is navigable for boats.

**The river** at its entrance is 100 feet wide, with a depth of 7 feet at low water. There is deeper water within for a short distance. At high water, 12 to 16 feet can be carried into the wharf, so that the river affords shelter to small coasting craft as well as boats. It is difficult to take a sailing vessel in through the narrow entrance, and it could not be done during the ebb stream which is rapid. The eastern shore of the river is a rocky promontory about 80 feet high.

**Wharf.**—A wharf, about 500 feet long, extends N.N.W. and has a depth of 18 feet at its outer end at low water.

**Rock.**—A rock, awash at low water, lies S. by E.  $\frac{1}{2}$  E., distant 5 cables from the outer end of the wharf. Another rock, with 4 feet over it at low water, lies S.S.E.  $\frac{1}{2}$  E. distant  $3\frac{1}{2}$  cables from the wharf.

Variation  $26^{\circ} 40'$  W.



**Leading lights.**—The front light, *fixed white*, 20 feet above high water, is shown from a white mast on the outer end of the wharf. The back light, *fixed white*, 79 feet above high water, is situated 1,242 feet from the front. These lights in line, bearing N.  $\frac{3}{4}$  W. lead into Pentecôte river. They are visible 10 miles in the alignment of lights.

**CAUTION.**—The alignment of these lights passes only 400 feet westward of the rock awash.

The eastern rocky shore of the river is steep-to, excepting a reef of rocks extending about 100 feet at low water from its southern point. There is a church, sawmill and telegraph office here. The sawmill which is operated by the St. Maurice Lumber Co., has a burner which is conspicuous from westward.

**Clearing line.**—In daytime, the burner of the mill just open westward of the eastern rocky shore of the river, bearing N.  $\frac{5}{8}$  W., leads clear of the rock into the river.

**Communication.**—A vessel from Quebec, calls at Pentecôte weekly during the navigation season.

**English point**, is a low, wooded, sandy point,  $6\frac{1}{2}$  miles S.S.W.  $\frac{1}{4}$  W. from Pentecôte river.

**A shoal** of large stones extends 3 cables off English point, and the southwestern side may be approached to the depth of 6 fathoms at low water. On the southeastern and eastern sides it is very bold, there being 15 fathoms at 3 cables and 30 fathoms at 6 cables from the 3-fathom contour.

There is a small village at English point containing about 15 or 20 families. There is a telegraph office in the village.

**Coast.**—A fine, bold, sandy beach extends from Pentecôte river entrance to English point. It is wooded close to the shore line.

**Egg island**, about  $2\frac{2}{10}$  miles southward of English point, is 7 cables long north and south, narrow, low and of granite rock, without trees. The southern end and western side of the island are bold.



**North reef**, the southern end of which is 4 cables northward of Egg island, is 3 cables long north and south, narrow and low but always above water. It is bold towards the mainland, and also towards English point, from which its northern end is distant  $1\frac{1}{2}$  miles.

**A reef**, drying 6 feet at low water, extends southward a quarter of a mile from these rocks, leaving a narrow 3-fathoms channel between them and Egg island.

**Northeast reef**, extends 6 cables northeastward from the northern point of Egg island. Some of its rocks show at low water. This reef breaks the swell rolling in between North reef and Egg island and is a shelter to the anchorage.

**LIGHT** (*Lat.  $49^{\circ}-37'-20''$  N., Long.  $67^{\circ}-10'-36''$  W.*).—A white light, 74 feet above high water and giving two flashes *every 24 seconds*, is shown from an octagonal lighthouse situated about 600 feet from the southern end of Egg island. The lighthouse has one vertical red stripe and is built over the keeper's dwelling. The light is visible 15 miles in clear weather and is obscured on the north side of the island over a certain arc.

**Anchorage**.—Egg island, with its rocks and reefs, forms a natural breakwater,  $1\frac{3}{10}$  miles long. It inclines slightly towards the coast at its northern end, and with the shoals off English point shelters the anchorage from northeasterly winds. The northern end of North reef is distant from the mainland nearly three quarters of a mile, and the southern end of Egg island more than a mile, but extensive flats extend from the mainland leaving a navigable channel about 3 cables wide in its narrowest part, which is abreast of the southern end of North reef.

The best anchorage is southward of this narrow part, where the breadth is 6 cables between the 3-fathom contours. Along the inner side of Egg island and of North reef, except their northern end, the water is deep, the soundings decreasing gradually towards the mainland. The best depth to anchor in is about 9 fathoms. The bottom is clay in the deep water towards the island, and sand from the depth of 9 fathoms towards the mainland. It is advisable, in order to have as much room as



possible with moderate depth of water, not to anchor northward of a line joining the middle of Egg island and Roadstead point (a rounded point on the mainland westward of Egg island). The best position is with the southern end of Egg island bearing about S.E. by S., and the inner side of North reef about N.E.  $\frac{1}{4}$  E., which is sheltered from the northeast, through north to southwest by the mainland, and from southeast to northeast by the island with its rocks and reefs. Winds, from between southeast and southwest are seldom strong, and with them some shelter may perhaps be found by shifting berth to eastward.

The anchorage at Egg island is too small to be a resort for large vessels, but as a place of refuge it might be of value.

**Telegraph cable.**—Vessels should not anchor in the vicinity of the submarine telegraph cable which has been laid in a direction about S.S.W.  $\frac{1}{2}$  W. from a position on the mainland about 400 feet westward of Boulder point to close to the northern end of Egg island. A sign board on the island indicates its position.

**Directions.**—From the southward, the approach to the southern end of Egg island and the anchorage is clear of all dangers. To run northward, through between the island and the mainland, stand into the northward until English point is open half a point northward of North reef, then steer for English point, giving the western side of North reef a berth of one cable, until a quarter of a mile northward of the reef. Then haul eastward out to sea. Do not approach Northeast reef for there are 20 fathoms at the distance of a quarter of a mile from it, in every seaward direction, and consequently little warning by the lead.

**Tides.**—At Egg island high and low water occurs twenty minutes earlier than at Father point. Springs rise  $11\frac{1}{2}$  feet, neaps 8 feet.

The rate of the tidal streams between Egg island and the mainland is one half to one knot, the flood setting southward and the ebb northward.

A part of the ebb stream sets towards and out through the narrow 3-fathoms channel between the island and North reef, and a part of the flood comes in through the same channel.



**Water.**—There is no water on Egg island, but it can be taken from small streams on either side of Roadstead point.

**Communication.**—A vessel from Quebec calls at Egg island weekly during the season.

**Calumet river** is a small stream flowing down into the sea  $2\frac{1}{2}$  miles southwestward of Egg island.

**Calumet reef** consists of large stones drying at low water, lying  $8\frac{1}{2}$  cables southward of Calumet river. These large boulders on the low water line extend along the coast on both sides of the river.

**Caribou islets.**—A small village comprising about ten houses, a chapel and telegraph office,  $6\frac{1}{2}$  miles southward of Calumet river. It is fronted by two islets, which, excepting at very high tides, form a rocky peninsula with sandy coves on either side of it in which boats sometimes shelter. Reefs and rocks extend off the shore to about half a mile and should not be approached closer than the 10-fathom contour.

A rocky patch with 30 fathoms, and depths of 55 fathoms inside of it lies S.E.  $\frac{1}{4}$  S. from Caribou chapel, distant 4 miles.

**Trinity bay**, about  $5\frac{1}{2}$  miles southwestward of Caribou point is 2 miles wide and nearly one mile deep. Two low black rocks lie off the northeastern entrance point. Trinity river flows into the bay at about 8 cables from the northeastern entrance point, and a fine sandy beach extends from the river entrance to the southwestern point of the bay which is rocky. The depth of water between the entrance points is 5 to 7 fathoms, sand bottom.

**Anchorage.**—This bay affords excellent anchorage in a moderate depth, with good ground, and plenty of room to weigh in any wind. It is valuable, in westerly winds, for sailing vessels bound up the St. Lawrence to wait opportunity to proceed round pointe des Monts and up the estuary.

**Light.**—On the east extreme of Trinity West, the southwestern point of Trinity bay, is exhibited, at a height of 35 feet above high water, a *fixed white* light from a white pole with small white shed at base.



**Trinity East**, is a small village with chapel and telegraph office, in the north corner of the bay. There is also a telegraph office at the western corner of the bay.

**Directions.**—In approaching Trinity bay, either from the northeastward or southwestward, do not close the land to less than the depth of 15 fathoms, until the bay opens. Then haul in and anchor in 7 or 8 fathoms at low water, with *pointe des Monts* lighthouse bearing S.W. by W.  $\frac{1}{2}$  W. just within *Caye Noire*,  $1\frac{1}{2}$  miles southward of the bay, and the outer of the two rocks off the northeastern point of the bay N.E.  $\frac{1}{2}$  E., the entrance of the river bearing N. by W.; this position being nearly one mile from the southwestern point of the bay. Small craft may anchor in three fathoms close under the southwestern point.

**Comeau bank**, a small rocky patch with  $8\frac{1}{2}$  fathoms over it at low water, within depths of 15 fathoms, lies one mile E.  $\frac{3}{4}$  S. from the southwestern point of Trinity bay.

**Communication.**—A vessel of the Clarke Steamship Line from Quebec, calls at Trinity bay weekly during the navigation season.

**The shore** from Trinity bay trends S.W. by W. 5 miles to *pointe des Monts*. The banks of soundings are steep and foul within the 10-fathom contour. A vessel not locally acquainted should remain outside the 20-fathom contour.

**Steamship reef**, awash at low water springs, lies E.N.E.  $2\frac{1}{2}$  miles from *pointe des Monts* lighthouse and one-half mile from shore, just inside the 3-fathom contour.

**Pointe des Monts lighthouse**, close to the sea on a small island 5 miles southwestward from Trinity bay, and northeastward 9 cables from *pointe des Monts*, is circular, 90 feet high, painted white, and exhibits, at 93 feet above high water, a *group flashing light*, giving 3 flashes every 20 seconds, with intervals of  $3\frac{1}{2}$  seconds between flashes, and 13 seconds between the groups. This light is not visible from the westward north of a line bearing E.  $\frac{3}{8}$  S.



**Marine signal and telegraph station** is at the lighthouse. (See page xliv.)

**Fog signal.**—A fog signal is made, in thick or foggy weather, from a white rectangular building on pointe des Monts, 9 cables S.W. of the light, sounding 2 blasts of  $3\frac{1}{2}$  seconds duration, at intervals of 4 seconds, every minute.

**CAUTION.**—Vessels eastward of pointe des Monts at night, when the land cannot be seen, should tack when the light bears W. by S.  $\frac{3}{4}$  S., but W.  $\frac{3}{4}$  S. is near enough if between Trinity bay and the light. The land, however, may be approached closer, using due caution, by the lead. Vessels westward of the point should tack as soon as the light bears E.  $\frac{1}{4}$  N.

**Rocks.**—A rock, with 11 feet over it at low water, lies S.S.W. one half mile from the lighthouse.

Another rocky ledge, with 9 feet over it at low water, lies S.E. from pointe des Monts, one-quarter of a mile from the shore. These rocks must be guarded against when making the light in thick weather, or when keeping close to the land with a northerly wind. There is little warning by the lead off pointe des Monts, there being 100 fathoms within half a mile of the 11-foot rock.

**Clearing line.**—The top of the trees in the first ridge back of the shore, level with the top of the lighthouse leads clear of the shoals when rounding pointe des Monts.

**Tides.**—It is high water, full and change, at pointe des Monts at 2h. 14m. Springs rise 12 feet, neaps  $7\frac{1}{2}$  feet.

**Tidal stream and current.**—Round pointe des Monts there is little or no flood stream running westward, excepting very close inshore. The constant downward current in the middle of the estuary is deflected off pointe des Monts southeastward towards cap Chat.

**Population.**—In 1921 the population around pointe des Monts was 12.

(For continuation North shore see page 80.)



## CHAPTER VIII

### SOUTH SHORE

#### FATHER POINT TO NORTHEAST RAZADE ISLET

*(Continued from page 30.)*

**Banks of soundings.**—On the south side of the St. Lawrence river from Father point past Bic island and the Razades and to near Green island, the water deepens gradually from the shore to a well-defined 20-fathom contour. It then deepens quickly to 30 and 50 fathoms, after which the bottom is comparatively flat to the middle of the river. There is then an abrupt drop from about 50 fathoms to a depth of 160 and 180 fathoms, and this deep water is carried well over to the north shore.

The 100-fathom contour trends in a general W. by S. direction to a point about 5 miles close south of Petites Bergeronnes cove, where it turns abruptly N.W. by N., thus forming the southwest limit of deep water.

Off the south shore with the exception of the spit extending north from Barnaby island and the shoals in the vicinity of Bic island, the water deepens very gradually from the shore to the 20-fathom contour. This contour runs  $3\frac{1}{2}$  miles off Father point,  $5\frac{1}{4}$  miles off the west end of Barnaby island, 1 mile off Bicquette islet, and  $5\frac{1}{2}$  miles off the shore when abreast of Razade islets or  $4\frac{1}{4}$  miles off the islets. Off the east end of Green island, the 20-fathom contour begins to approach the shore. It is almost coincident with the 10-fathom line off Green island reef, and runs along Green island at a distance of about five cables. Off the southwest end of the island it increases its distance from the shore and curves northeast, passing along the southeast side of Red islet bank, to about 5 miles E.N.E. of Red islet.

Off Portneuf sands the 100-fathom line is 3 miles from the edge of the drying flats and trends about W.S.W., gradually closing the shore, till, in the vicinity of Escoumains islets it is



within a few cables of the drying line. Off cape Bon Désir there are depths of over 120 fathoms within a few yards of the rocks.

On the north side, except in the vicinity of Mille Vaches bay, deep water runs so close to the shore that little warning can be given by the lead. Off Mille Vaches point the 20-fathom contour is about  $3\frac{1}{2}$  cables from the edge of the flats, when abreast of Sault au Mouton  $1\frac{3}{4}$  miles from the drying line, thence decreasing its distance from the shore until, off Escoumains islets, it is again less than 5 cables distant.

Northwestward of Red islet a deep and narrow gut separates the bank from the shoaler water off the mouth of the Saguenay river. Red islet bank is very steep-to on the northwest side, there being a distance of only two cables between the 3-fathom contour and depths of over 30 fathoms.

Off the mouth of the Saguenay river, the 20-fathom contour is a considerable distance from the shore, but the drop into deep water is very abrupt. Prince shoal and the Rocky patches are situated on the southeastern edge of this contour, there being 30 or 40 fathoms within a few cables of these shoals.

The 20-fathom contour is so frequently referred to, because it is usually well defined in those parts of the river which are most used.

There are so many aids to navigation such as foghorns and submarine bells, that by careful sounding and attention to the chart, a vessel with good sounding apparatus could, in foggy weather, work her way for a considerable distance up the river without danger.

**FATHER POINT (POINTE AU PERE)**, W.  $\frac{1}{2}$  S.,  $19\frac{1}{2}$  miles from Little Métis point lighthouse, is low. A conspicuous church is back about a quarter of a mile from the shore, and the village of Ste. Anne de la Pointe au Père is grouped about it. The population in 1921 was 343. Dwellings are continuous between Ste. Anne and Ste. Luce, and the country lying back of the coast ridges is well cultivated. Father Point is the quarantine inspecting base for vessels travelling up the St. Law-



rence. The Dominion of Canada Quarantine Officer boards vessels at this point from the pilot tender. (*See under Quarantine, page 55.*)

**Government wharf.**—A wharf, about 750 feet long, extends in a northerly direction from the western extreme of Father point. The depths at low water are, 14 feet along outer end, and 8 feet for a distance of 420 feet along the westerly face and 450 feet along the easterly face.

The pilot tender lies alongside this wharf. There is a fog bell on a post at the outer end of the wharf, which is sounded to guide the tender in foggy weather, and at night small lights are placed to assist her in coming alongside. Two derricks are installed on the wharf.

**LIGHT** (*Lat. 48°-31'-03" N., Long. 68°-28'-11" W.*)—The lighthouse is of concrete with flying buttresses, painted white with red lantern. It is 97 feet high from base to vane and is situated just above high water line close to the point. From this lighthouse, is exhibited, at a height of 91 feet above high water a *group flashing* light, thus: *4 flashes in quick succession followed by an eclipse of 4½ secs.* The light should be visible for a distance of 15 miles in clear weather from all points of approach.

The old lighthouse, a square building with a horizontal black stripe, is situated a few yards west of the present one.

**Fog signal.**—In thick weather of any sort a diaphone operated by compressed air sounds, *every minute, two blasts*, each of *four seconds'* duration, thus: *blast 4 seconds, silent interval 3 seconds, blast 4 seconds, silent interval, 49 seconds.*

The fog horn building is a short distance east of the new lighthouse, just above high water line.

**Signal station.—Storm signals.**—Father Point has a telegraph, telephone and signal station, situated close to the wharf and easy of access. The Canadian Meteorological Service maintains a storm signal station, from which all information as to weather, etc. can be obtained. Storm signals are exhibited from a pole on inner end of the wharf. (*See pages xlv and xlvii.*)



**Government wireless station.**—This is one of the principal wireless stations of the gulf. The station house, the mast of which is very conspicuous, is situated about a quarter of a mile S.S.W. from the lighthouse on the shores of the small bight just west of the point. (*See page xxxviii.*)

**Ice.**—The river never freezes over at Father point. Drifting field ice usually arrives towards the middle of December, and disappears early in April; there is rarely any heavy ice until the end of December, and a channel of water always remains open, either on the north or south side of the river, according to the prevailing wind, even a light air being sufficient to drive the ice to mid channel. There is less ice than usual at Father point when the ice bridge forms at Quebec. The first vessel usually arrives at Father point from sea about the 24th of April, and the last one leaves the last few days of November.

**PILOTS.**—The pilotage of the lower St. Lawrence is controlled by the Department of Marine and Fisheries. The limits of the district are between a line drawn from Father point to the eastern anchorage ground at cape Colombier on the northern shore as the eastern limit, and Quebec, including the Saguenay river, as the western limit. Pilots are embarked on inward-bound vessels and disembarked from outward-bound vessels at Father point by a steam tender. Special pilots are employed for the Saguenay river; they also are stationed at Father point.

There is a local Superintendent of Pilotage in charge at this station and the office is open day and night during navigation.

All masters are requested to approach the light buoy No. 27B as close as is prudent as, in addition to taking pilot and taking or delivering mails, the quarantine officer boards the vessel from the tender, and it is also important that masters have all their papers in order to insure quick service. (*See page xlviii.*)

The Shipping Federation of Canada has an agent at this port and the nearest Lloyd's agent is at 675 St. Peter St., Montreal.



**Quarantine.**—The Quarantine Officer boards all inward bound vessels at Father point, where quarantine clearance is given, provided the vessel is free from quarantinable or other infectious disease.

Inbound vessels having quarantinable disease on board, i.e., cholera, plague, smallpox, typhus or yellow fever are instructed by the Quarantine Officer at Father point to stop at the Grosse Isle Quarantine Station, a partial clearance only being granted in the meantime. Vessels having on board persons who refuse vaccination under section 28 of the Quarantine Regulations are also required to stop at Grosse isle for the disembarkation of such persons. In the case of minor infectious disease on board, i.e., chickenpox, diphtheria, enteric fever, erysipelas, influenza, measles, scarlet fever, etc., the captain is instructed by the Quarantine Officer to land persons affected therewith at the port of Quebec, in care of the Immigration Medical Officer of that port, for transfer to the Immigration Minor Infectious Diseases Hospital.

By a recent amendment to the Quarantine Regulations (Order in Council P.C. 1327, dated August 20, 1925) all vessels operating *exclusively* between ports of the United States and ports of Canada, except when coming from an infected port, and provided they are free from quarantinable or other infectious disease, are regarded as coastwise, and as such exempt from quarantine inspection. Such vessels having passed through the Panama canal from United States ports on the Pacific coast do not thereby lose their coastwise status, provided they have not touched at any foreign port other than way-ports on the Panama canal en route.

**Light-buoy.**—A black cylindrical light-buoy, No. 27B, is moored in  $6\frac{1}{2}$  fathoms of water about 3 cables N.W. by N. from the pier end. This buoy exhibits a *white* light *occulted* at short intervals, and marks the safe limit of approach to meet the pilot tender.

**Tides.**—It is high water, full and change, at Father point at 2h. 26m. Springs rise  $14\frac{3}{4}$  feet, neaps rise 10 feet.

Tide tables for Father point, with much necessary information regarding tidal streams between here and Quebec, are published



annually and well in advance. Masters frequenting the St. Lawrence should make a point of obtaining tables for the coming year as soon as issued. (*See preface.*)

**Communication.**—Vessels of the local coasting trade plying between Montreal and the gulf ports call about once a fortnight during the season. The Canadian National Railway station for Father point is St. Anaclet, nearly 3 miles back, but Rimouski is the more convenient as all trains do not stop at St. Anaclet.

**Shore.**—Extending westward from Father point for a distance of about a mile are slate ledges which dry at low water. The highest boulders of these ledges seldom cover. Close west of the point the shore trends about south for half a mile, thus forming a small bight, then in a W.S.W. direction to Rimouski wharf. The shore is low and is fringed by sand and mud, with rocky ledges at the low water line.

**RIMOUSKI**, with the village **Rimouski wharf**, is a considerable town, and an important station on the Canadian National Railway. It has a conspicuous church and several other conspicuous religious buildings. The population of Rimouski town in 1921 was 3,612.

Large sawmills are situated at the mouth of the river, and the manufacturies are principally in connection with wood products such as pulp, doors, sashes, &c. Much lumber is shipped from here to Europe and South American countries. This is the centre of a good agricultural district, and large quantities of potatoes are sent to the United States. There is also a large biscuit manufactory here.

**Consul.**—There is a U.S. consular agent at Rimouski.

**Supplies.**—Supplies of all sorts can be obtained at Rimouski in moderate quantities. Fresh water from a pipe on the wharf is delivered to vessels alongside on application to the Harbour Master. The water is supplied by the Department of Public Works. A branch line of the Canadian National Railway runs to the end of the wharf and lumber and coal is brought down by rail. There is usually only sufficient coal in store on the wharf for the use of the various Government steamers making



this their headquarters, but coal could be obtained in cases of emergency from various depots along the line or direct from the mines.

There is a Harbour Master at Rimouski and the harbour master's and sick mariner's dues are at the same rate as at other Canadian ports.

**Railway.**—The Canadian National railway runs along the southern shore of the St. Lawrence about a mile inland, connecting Montreal and Quebec with Halifax and maritime province ports. At Métis, about 20 miles eastward of Rimouski, the line turns from the coast and runs through the Matapedia valley to Campbellton at the head of Chaleur bay. Two through trains a day are run each way between Halifax and Montreal.

**Rimouski wharf,** (quai de Rimouski), the postal name of the village between Father point and Rimouski, is grouped round the end of the wharf about 3 miles from the point and  $1\frac{1}{2}$  miles from the town of Rimouski. A convenient general store with post and telegraph offices is situated here. Mail from the incoming steamers for the Maritime provinces is landed at the wharf by the pilot boat.

**Government wharf.**—A wharf, 2,330 feet in length and having a width of 243 feet at its outer end, extends from the shore in a N.N.W. direction. The outer end of the wharf is L shaped; the foot of the L being to the eastward. This forms a small dock, 50 by 90 feet in dimensions, in which small craft drawing about 3 feet of water can, except in easterly gales, obtain shelter. There is a depth of about 10 feet along the eastern outer end, and for a distance of about 150 feet along the eastern side. Schooners and smaller vessels that can lie aground at low tide berth along the eastern side in good weather. A vessel can remain alongside the western side in almost any summer weather.

A dredged tidal basin extends off the outer end and western sides of the wharf. At present an area has been dredged to a depth of 16 feet for a distance of 400 feet off the outer end, and an area 200 feet wide extending a distance of 1,000 feet along the western side has been dredged to  $21\frac{1}{2}$  feet at low water. This basin has been dredged in order to facilitate the loading



of vessels. It is to be noted, that, at the present time, in order to reach this basin not more than 10 feet of water can be depended upon on the line of approach across the bar. Dredging is in progress however to increase the depth to a minimum of 15 feet at low water.

A large black boulder, which dries 4 feet at extreme low water, lying well off the shore about half a mile eastward of the wharf, affords a good guide as to the water in the channel. When this is just awash nothing less than 15 feet should be found on the range line.

**LIGHT** (*Lat. 48°-28'-46" N., Long. 68°-30'-57" W.*).—On the roof of the freight shed on the outer end of wharf, is a square white lantern, from which is exhibited at a height of 30 feet above high water a *fixed white* light, which should be visible from a distance of 10 miles in clear weather.

**Hand foghorn.**—At the lightstation on Rimouski wharf is a hand foghorn that answers signals from steamers in thick weather.

**Range lights.**—On the west side of the wharf two *red* lights, 400 feet apart, the outer one being near the outer end of the wharf, give the line of the dredged channel across the bar. Except at extreme low water springs the alignment of electric lights seen in line along the pier will give sufficient water for vessels of about 10 feet draught to come alongside. These lights are unwatched.

**Caution.**—Care must be exercised when turning to come alongside the wharf end, not to get any distance west of the line looking along the wharf, as the channel is close to the edge of the flats, and boulders are frequently deposited by the ice just on the edge of the shoaler water.

Another small Government wharf is located at the mouth of Rimouski river. It dries at low tide.

**Rimouski road**—abreast of Rimouski wharf—is off the eastern end of Barnaby island. Vessels anchor here in order to load timber, and are not likely during the summer months to experience any winds which would make it necessary to leave the anchorage.



The best anchorage is in 4 to  $4\frac{1}{2}$  fathoms, with the east end of Barnaby island bearing about W. by S. and the pier end bearing about S. by W.  $\frac{1}{2}$  W. To obtain better shelter from strong westerly winds smaller vessels anchor just west of the line along the wharf, with the east end of the island about W. by N., distant  $\frac{1}{2}$  mile.

**Light-buoy.**—A black cylindrical light-buoy, No. 29B, is moored in  $6\frac{1}{4}$  fathoms with Father point lighthouse bearing East, distant 2 miles, and exhibits a *white* light occulted thus: visible 7 seconds, eclipse 6 seconds.

**Barnaby island**, the eastern end of which is about W. by S., distant  $3\frac{1}{2}$  miles from Father point, is 3 miles long and 400 yards wide at its widest part. It is covered with low trees except for half a mile of grassy land, which commences three quarters of a mile from the east end. When seen from the eastward between the bearings west and southwest, it appears as two islets until within four or five miles when its true aspect can be discovered. Near the west end of the island is a lake of fresh water, which is not good. The north shore of the island is fringed by slate ridges, drying out about 100 yards at low water. A narrow slate ridge extends  $1\frac{1}{2}$  cables eastward from the east point of the island. A large boulder which seldom covers is on this ledge.

**Shoal water** extends some distance off the north shore of Barnaby island. This bank, of sand and gravel, is widest  $1\frac{1}{10}$  miles from the western end of the island, where the 3-fathom contour is 8 cables from the shore. There are depths of 12 feet just inside the 3-fathom line.

Approaching Rimouski from the westward the east end of Barnaby island can be rounded as soon as the head of the wharf is in line with the inner end. At night it would be advisable before turning, to see the rear red light just open east of the front one, and then steer on to the line. When east of the end of Barnaby island on this course no less than 16 feet of water should be found.



Between Barnaby island and Rimouski the channel is completely dry at low water except for the shallow drainings from the river. There is about 12 feet water at high water springs and about 6 feet at high water neaps in this passage, but the numerous boulders make it a bad passage even for boats.

The approach to the timber wharves is usually re-marked each season by trees (balises), and any boulders on the best approach are marked in a similar way.

A drying reef extends 3 cables from the western end of the island in the same direction as the island runs, and shoal water, 10 feet or less, extends for a further distance of 2 cables.

**Bare rock**, a narrow island 126 feet high and about 7 cables long, lies 7 cables south of the west end of Barnaby island and two cables off the main shore. The slopes are wooded and the summit bare.

**Barnaby road**.—There is an anchorage for small vessels giving good shelter from easterly winds, off the western end of Barnaby island. The saw-mill chimney at Rimouski in line with the west end of Bare rock island, bearing E. by S.  $\frac{3}{4}$  S., and the western end of Barnaby island, bearing about N.E. by E., gives a good position for anchoring in 14 to 16 feet with mud bottom. Boats can shelter half a mile farther eastward in mid channel between Barnaby island and Bare rock island.

**The shore** from abreast the western end of Barnaby island trends in direction about W.S.W. for 4 miles to Hattie bay. It is fronted by drying ridges of slate and backed part of the distance by wooded cliffs. The railroad runs along the shore just above high water mark. Westward of Hattie bay the shore is backed by high wooded cliffs with several conspicuous bare patches.

**Old Bic harbour**,  $7\frac{1}{2}$  miles westward of Barnaby island, dries out at low water, with the exception of a small bight between the entrance points. The eastern entrance point is formed by two round wooded islets, East Bicoque, 106 feet, and West Bicoque, 112 feet high.

**Wharf**.—The 400-foot wharf at East Bicoque is now destroyed, except for a short portion of ruined cribwork near the shore.



There is an inner wharf at the mouth of the stream in the eastern end of the harbour, alongside which trading schooners lie to work cargo. This wharf can only be approached towards high water, and the outer end dries about 4 feet at low water.

**Bic** is on the main line of the Canadian National Railway. It has a church conspicuous from certain directions, a post and telegraph office. In 1921 it had a population of 912. Supplies in small quantities can be obtained.

Extending south from West Bicoque into the harbour, is a rocky ridge, and in the same direction 2 cables distant from the south end of the islet is a reef which dries 13 feet at low water.

There are two good streams emptying into the harbour, one in the east and the other in the west end.

**Tides.**—It is high water, at Bic harbour, 10 minutes, and low water 15 minutes, later than Father point. Springs rise  $15\frac{1}{4}$  feet, neaps rise  $10\frac{3}{4}$  feet.

**Old Bic road.**—Small vessels awaiting the tide anchor midway between the entrance points in 12 to 14 feet water, muddy bottom, with the west point bearing about W. by N., or if shelter from a westerly wind be desired, in 12 feet of water with the west entrance point bearing about W.N.W., distant  $1\frac{1}{2}$  cables.

**Aspect.**—The land westward of Bic commences to take the peculiar formation of the Bic ranges. The hills, rising gradually from the east and west to Bic mountain, are composed mainly of greywacke slate and run in narrow ridges parallel to the coast and to each other, with deep valleys between. When seen from up or down the river these ridges present a very remarkable appearance.

**Original reef,**  $1\frac{1}{4}$  miles westward of the west point of Old Bic harbour, is formed by two reefs. The western of these is about  $4\frac{1}{2}$  cables long. The eastern portion of this is 3 feet high, but the western part is covered at high water. The east rock, which lies N.E. by E. distant 3 cables from the summit of the west reef, is dry 8 feet at low water.



**Original bay**, about  $1\frac{1}{2}$  miles west of Bic harbour, affords good anchorage for small vessels in westerly winds, being sheltered by cape Original from the wind, and from the westerly sea by Original reef.

The best position is in 3 fathoms, mud, and distant 3 cables from the summit of the western reef and with the northern face of cape Original bearing W.  $\frac{3}{4}$  N.

**Cape Original**,  $10\frac{1}{2}$  miles W.  $\frac{3}{4}$  S. from Barnaby island, is the north extreme of a small peninsula jutting out from the mainland. The hill, 240 feet high, is of the usual formation, high and narrow, the north face being a perpendicular cliff about 220 feet high.

South of cape Original and separated from it by a valley which is but 30 or 40 feet above high water level, is another hill, about 500 feet high, wooded, with, on the summit, one tree higher than the surrounding ones.

**Ha! Ha! bay**, on the western side of the cape Original peninsula, affords anchorage for small vessels in easterly winds. Except, however, for boats, which can go well inside the entrance points, this is not a comfortable berth as the tidal eddies and back swells from the shore set up a confused sea. With the excellent shelter afforded by the Bic grounds there is no reason why this bay should be used.

**BIC ISLAND** lies N.N.W. from cape Original, Bic channel, between the island and the cape, being a little over 2 miles wide. The island is  $2\frac{3}{4}$  miles long northeast and southwest and one mile broad, is wooded, the tops of the trees being about 180 feet above high water. Except on the south side the shore is broken into small bays, all of which dry out. The northern side has numerous small reefs and islets lying close off. Drying ledges of slate fringe the coasts of the island.

**Tides.**—It is high water, at Bic island, 5 minutes, and low water 8 minutes after Father point. Springs rise  $15\frac{1}{4}$  feet, neaps rise  $10\frac{3}{4}$  feet.

**Beacons.**—On the western end of Bic island are three white beacons. The southwest and northeast of these in line lead to Alcide rock (*see page 67*). The northwestern and southwest-



ern beacons in line lead just clear but very close westward of the foul ground off Northwest reef.

**Southeast reef**, which lies about one mile E.S.E. from the east point of Bic island, consists of three long narrow islets, the eastern and highest being 7 feet high, and a reef which dries 3 feet at low water. There is a boat passage between the middle and west islet and a deeper passage between this latter and the drying reef. It is not advisable to attempt these passages, but if it is necessary, small craft should keep close to the western side of the western islet.

Shoal water extends one cable from the eastern end of Southeast reef, but both north and south sides are comparatively steep-to.

**Northeast reefs.**—Two small reefs lie off the northeast extreme of Bic island. The outer, which lies 4 cables E.N.E. from the point, dries 6 feet at low water. The inner reef lies  $1\frac{1}{2}$  cables west of the outer. This rock is seldom visible, being only awash at extreme low water. Deep water separates the two rocks. West Bicoque bearing S.S.E.  $\frac{1}{2}$  E. and open east of the eastern end of Southeast reef, leads eastward of these reefs.

**BICQUETTE ISLAND** lies to the northwest of Bic island, separated therefrom by a channel 7 cables wide from shore to shore. It is the largest islet of a group consisting of one large islet about 50 feet high and several rocks detached at high water. The ground eastward of Bicquette islet is very foul. The eastern extreme of this foul ground is a rocky patch with 13 feet water over it at low water, lying E. by S.  $\frac{3}{4}$  S., distant one mile from the lighthouse. The northeast extreme is a rock awash at low water, which lies about East, distant 6 cables from the lighthouse.

**LIGHT** (Lat.  $48^{\circ}-24'-53''$  N., Long.  $68^{\circ}-53'-30''$  W.).—A circular white tower, 74 feet high, with red lantern, situated near the middle of the northern side of the island, exhibits at a height of 112 feet above high water a *flashing white light every three seconds*, thus: flash  $\frac{1}{4}$  second, eclipse  $2\frac{3}{4}$  seconds. This light should be visible from a distance of 17 miles in clear weather.



**Fog signal.**—A diaphone operated by compressed air sounds during thick weather of any sort, *one blast every minute*, thus: blast *8 seconds*, silent *52 seconds*. The building from which the horn is sounded is situated close to the edge of the cliff about 130 feet west of the lighthouse. The horn is about 50 feet above the water.

**Caution.**—Owing to peculiar local conditions this fog signal is occasionally only faintly heard on bearings southerly from the lighthouse, even when quite close, whilst at the same time it may be plainly audible on the north shore in the vicinity of Mille Vaches, 14 miles distant. This remark applies to both eastward and westward.

**West reef**, an islet 6 feet high, lies W.S.W., distant 5 cables from the lighthouse. Vessels may pass in deep water between Bicquette islet and West reef, keeping nearer the reef than Bicquette islet.

A reef which dries 4 feet at low water lies S.W. by W., distant  $4\frac{1}{2}$  cables from West reef. Passage should not be attempted between this and West reef.

**Northwest reef**, lying west  $1\frac{1}{4}$  miles from Bicquette lighthouse, is a reef about one cable long, with two heads. The north-eastern of these is the highest and dries 14 feet, and is only covered by the highest tides. Foul ground extends 5 cables west-southwest. On this foul ground distant  $3\frac{1}{2}$  cables from Northwest reef is a rock with 5 feet water over it.

**Clearing line.**—The southwest point of Bic island (on which are three beacons) in line with eastern fall of cape Orignal, bearing about S.E.  $\frac{1}{4}$  E., clears the foul ground west of Northwest reef.

Bicquette island, West reef, and Northwest reef are all steep-to on the north side.

If attempting the passage between Northwest and West reefs from the eastward, pass north of Bicquette and West reef at a distance of  $1\frac{1}{2}$  to 2 cables. Having passed West reef keep the northern side of Bicquette just open north of it until sure of having passed the drying reef to southward. Be careful, however, not to bring more than half of Bicquette island north of



West reef on account of the shoal patches south of Northwest reef.

When Northwest reef (if visible) bears N.N.E., or when the summit of the high hill (512 feet) just back of cape Original is in line with the western end of Bic island bearing about S.E.  $\frac{1}{2}$  S., steer south for the anchorage or as required.

**BICQUETTE CHANNEL.**—There are no definite leading marks for running through this channel, and it can best be done by sight and with the assistance of the chart. At extreme low water there is no particular difficulty as all the dangers are visible. From either east or west, mid channel can be picked up by eye and a course made on the Bic island side of mid channel. The off-lying dangers on the north shore of Bic island are always visible except at very high tides.

From the eastward, being clear of Northeast reef and having the two eastern points of Bic island in line and being distant about  $3\frac{1}{2}$  cables from the northeastern point, steer W.  $\frac{3}{4}$  S., or a little southerly to keep on the Bic island side of mid channel. Care must be taken not to allow the easternmost detached islet of the Bicquette group to bear anything east of E. by N.  $\frac{3}{4}$  N. until the western point of Bic island bears S.S.E.  $\frac{1}{4}$  E.

The directions given above should lead in not less than  $5\frac{1}{2}$  fathoms of water at any time.

From the southwest, approach with Bicquette lighthouse bearing N.E. by E.  $\frac{1}{2}$  E. open just south of West reef. When the clearing mark of Northwest reef (west end of Bic island in line with eastern fall of cape Original) comes on, alter course at once to E.  $\frac{3}{4}$  N., or a little easterly of that. Continue this course until the east end of Southeast reef is seen opening east of the northeast extreme of Bic island. If Northeast reef is not visible, then alter course a little northward to avoid any possibility of being set on this.

**Caution.**—It must be understood that none of these passages between Bicquette and Bic islands are recommended for strangers. The above directions are only given as assistance if a vessel is driven by necessity to make use of them. However, with local knowledge and clear weather there is no particular difficulty in negotiating them.



**Bic channel**, between Bic island and the south shore of the river, is nearly 2 miles wide between the 5-fathom contours, and clear of dangers, but see *Alcide rock*, page 67.

**Anchorage.**—Excellent anchorage from westerly winds can be obtained off the east end of Bic island in the bight between Northeast and Southeast reefs. Large vessels should anchor in about 7 fathoms sand and mud about  $3\frac{1}{2}$  cables north of the highest islet of Southeast reef, with Bicquette island just open north of Bic island northeast point.

Small vessels can anchor nearer Bic island as convenient, but most comfortable berth is between the western islet of Southeast reef and the east point of Bic island, the northeast point of the island being just open east of the latter point. The depth here is about  $4\frac{1}{2}$  fathoms sand and mud, and the confused sea due to tide against wind is not so much felt.

With northerly winds, which are very strong in the autumn, the best anchorage is about 5 cables off the south shore of the island and about midway along. This shore of the island has good water off, the 3-fathom line being  $1\frac{1}{2}$  cables from the shore.

With easterly winds the most comfortable anchorage is southwest of the western point of Bic island, in a position with Bicquette lighthouse just open west of Bic island, bearing about N.N.E., and Southeast reef just open south of the south side of Bic island. The depth here is about 8 fathoms; bottom, sand and mud. There is no more wind and considerably less sea here than farther northwest and west of the island.

In all the anchorages mentioned here small vessels could anchor as near the shore as convenient, whilst large sailing vessels could anchor sufficiently far off to give themselves room for weighing and casting.

Drying ledges of slate extend 2 cables west from the west end of Bic island, and shoal water for another cable, the western extreme of the 3-fathom contour being 5 cables from the west point of the island.

**From Ha! Ha! bay** the coast trends in direction about W. by S. The land just back of the shore line is mountainous, rising to Bic hill, the summit of which, 1,215 feet high, is only a little



over half a mile back from the shore line. On the seaward side of Bic hill is a very conspicuous line of granite cliff shaped like a broad V.

Situated S.W. by W.  $\frac{1}{2}$  W., distant  $2\frac{1}{2}$  miles from cape Orignal, is a small wooded promontory about 180 feet high, which is the western point of a shallow bay. The high water line in the bay is fringed with slate and rock ledges covered by sand and mud. It is a bad landing for boats except at high water. A road here leads over the ridges to St. Fabien. St. Fabien church spire is visible only from the direction of Northwest reef.

**ALCIDE ROCK** lies west, distant  $4\frac{9}{10}$  miles, from cape Orignal, and  $1\frac{9}{10}$  miles from the shore to the southward. It is very small, being about 6 feet long and 2 feet wide, and has 5 feet over it at low water. The shoal on which it is situated is 3 cables long east and west, with 9 feet water to eastward of the rock and 3 fathoms to the westward. Deep water of from 7 to 9 fathoms surrounds the shoal.

**Buoy.**—A black can buoy, No. 31B, is moored in 8 fathoms close northward of Alcide rock.

**Beacons.—Clearing marks.**—The southwest and northeast beacons on the west end of Bic island when in line lead over Alcide rock. There are also two beacons on the shore  $4\frac{6}{10}$  miles westward of cape Orignal which in line lead over the rock. These beacons are used to place the buoy. To clear the rock keep either set of beacons open. Mont Camille (the highest mountain southeast of Father point) open north of cape Orignal leads northward of the rock. This line can only be picked up in very clear weather. Southeast reef bearing about E. by N.  $\frac{1}{2}$  N. and just seen south of the south side of Bic island, leads about three quarters of a mile north of the rock.

Half a mile inland from the Alcide beacons is a conspicuous hill, 900 feet high, with a notched summit. Commencing immediately west of these beacons is a stretch of  $2\frac{1}{2}$  miles of nearly perpendicular cliffs, 500 to 600 feet high. Thence the coast runs straight in direction W.S.W. a distance of  $8\frac{1}{2}$  miles to abreast of northeast Razade islet.



**Shoal ridge.**—From cape Orignal westward the shore is fairly steep-to with very little drying line, the 5-fathom contour being never more than 5 cables from the general line of coast. At 8 miles from cape Orignal a bank commences, and the 5 fathom contour is  $1\frac{1}{4}$  miles from the shore. Three miles farther west the 3-fathom contour suddenly extends northward and is nearly coincident with the 5-fathom line, which runs along, distant  $1\frac{1}{2}$  miles from the shore, to northeast Razade islet. Inside the 3-fathom contour is a stoney ridge with several patches of 12 feet at low water. The outermost of these patches lies about E. by N.  $\frac{1}{4}$  N., distant  $2\frac{1}{2}$  miles from northeast Razade islet.

Basque island kept open its own breadth north of northeast Razade islet leads northward of the ridge, along the edge of the 5-fathom contour.

**Uneven soundings.**—Several comparatively shoal rocky patches lie west and southwest from Bic island. Although with one exception none of these would constitute a danger even for deep draught ships, yet it is possible that a master sounding his way up in foggy weather might pick up a shoal spot on the edge of the 20-fathom contour and so be rendered very uncertain as to his position.

**Shoals.**—A rocky patch having 30 feet water over it at low water lies S.W. by W.  $\frac{1}{2}$  W., distant 8 miles from Bicquette lighthouse. This shoal is surrounded by a depth of 10 to 12 fathoms, and there are several small patches of 10 fathoms in the vicinity.

A small rocky patch lies W. by S.  $\frac{1}{4}$  S., distant  $11\frac{1}{2}$  miles from Bicquette lighthouse. This patch, which has 9 fathoms water over it, is but a few yards inside of the 20-fathom contour, and the water deepens to 80 fathoms less than a mile northward of it.

Variation  $23^{\circ}$  W.



## CHAPTER IX.

### SOUTH SHORE

#### RAZADE ISLETS TO GREEN ISLAND

**Razade islets.**—N.E. Razade islet lies about 16 miles W. by S.  $\frac{1}{4}$  S. of cape Orignal, and  $1\frac{1}{2}$  miles from the mainland to the southward; S.W. Razade is  $1\frac{3}{4}$  miles S.W.  $\frac{1}{2}$  W. from N.E. Razade and  $1\frac{1}{4}$  miles off shore. These islets are each about a quarter of a mile long, rocky, low and bare of trees. There is no passage for vessels between the islets and the south shore. Shoal water extends about 2 cables northward of N.E. Razade islet, and about 7 cables northward of S.W. Razade. A small group of rocks, which dry about 4 feet at low water, lies about 5 cables eastward of S.W. Razade islet.

**The shore,** between N.E. Razade islet and the east end of Green island, is generally low, with occasional rocky points surmounted by trees. The land rises in undulating ridges to the back ranges, 700 to 1,000 feet high, with no conspicuous summits. The shore is fringed with extensive flats, drying at low water for the most part. The 3-fathom contour is practically a line between N.E. Razade islet and Green island reef, extending slightly off the north side of Basque island. The islands lie near the northern edge of this shoal water. The depths are very irregular within this 3-fathom contour, except between S.W. Razade islet and Basque island, where good water for small craft can be carried to within a mile and a half of Trois Pistoles pier. To the westward of Green island reef the water quickly deepens, the 10-fathom contour approaching to within a few cables of Green island shore, so that great caution is necessary on approaching the reef from the westward in foggy weather, as little warning is given by the lead.

**Trois Pistoles** is a town on the Canadian National Railway. It has a very conspicuous church of greyish colour, having one high and two shorter spires. This church can be seen from a great distance, especially when the sun shines on it. Grouped around the inner end of the wharf are several brilliantly painted summer cottages. The population of Trois Pistoles was 3,255 in 1921.

Variation  $22^{\circ}$   $30'$  W.



**Wharf.**—A small point, which is the eastern extremity of a wooded elevation about 180 feet high, lies N.N.W. of Trois Pistoles church, distant 6 cables. From this point a wharf is built out in north and northwest direction. This wharf dries at low water springs, and has about 12 feet alongside it at high water. A breakwater shelters the inner end of the wharf on the northeast side.

Small craft making for the wharf should keep the wharf shed in line with the highest spire of the church, when no less water than 7 feet should be picked up at lowest tides to within a distance of 8 cables from the pier. Off the end of the wharf there are numerous boulders, so a vessel should not attempt to go alongside until near high water.

**Light** (*Lat.*  $48^{\circ}-08'-00''$  N., *Long.*  $69^{\circ}-11'-03''$  W.).—From a mast on the end of the wharf is exhibited, at 23 feet above high water, a *fixed white* light, which should be visible from a distance of 9 miles in clear weather.

**Tides.**—It is high water, full of change, at Trois Pistoles at 2h. 30m. Springs rise  $15\frac{1}{2}$  feet; neaps, 11 feet; neaps range 5 feet. High water is 7 mins. and low water 11 mins. after Father point.

**BASQUE ISLAND**, the northeast end of which lies W.  $\frac{3}{4}$  S.  $3\frac{3}{4}$  miles from S.W. Razade islet, is  $1\frac{1}{4}$  miles long and a little over 2 cables wide. It is thickly wooded, the summit of the trees being 130 feet above high water. The water is very shoal along the northwest side to a distance of half a mile from the island. From the southwest point of the island and running southeastward is a sandy spit, which at low water is almost joined to the drying flats extending from the mainland, a deep hole, less than half a cable wide, separating them.

**Anchorage.**—Good anchorage for small craft, giving shelter in westerly winds, can be obtained about three quarters of a mile off the east end of Basque island in about 17 feet, sand and mud. To pick up this anchorage, bring the shed on Trois Pistoles wharf in one with the highest spire of the church, bearing S. by E.  $\frac{3}{4}$  E., steering on this line until the west end of Apple island is just seen along the southeast side of Basque island.



**Basque reef.**—The highest portion of this reef lies west, distant  $6\frac{1}{2}$  cables from the western end of Basque island. This rock only covers at the highest tides. Another head, which dries 10 feet, lies N.E. by E.  $\frac{1}{2}$  E., distant 4 cables from the above rock. There is passage for small boats between these rocks and Basque island.

**Basque hole.**—To the southward and eastward of Basque island, distant half a mile from the southwest point, is a curious deep hole 9 cables long and about half a cable wide, with depths of 4 to 5 fathoms. In this hole small vessels occasionally moor, but at low water spring tides there is no swinging room for anything larger than boats.

From Trois Pistoles southwestward, drying flats extend to a considerable distance from the shore. These flats consist of sand, mud and large boulders. Just outside the edge of the drying line are great numbers of these boulders, which begin to uncover at about three quarter ebb tide. A group of rocks, the highest of which dries 13 feet, lies S.S.W., distant  $1\frac{3}{4}$  miles from the southwest end of Basque island.

**Sawmills** are situated at the mouth of the Trois Pistoles river,  $2\frac{3}{10}$  miles W.S.W. from Trois Pistoles. The smoke from the chimney of the sawmill can be seen from some distance. There is a wharf here, with about 10 feet alongside of it at high water, a church, store, and houses of the employees of the mills. The Canadian National Railway crosses the bridge at the mouth of the stream.

**APPLE ISLANDS**, a group of bare islets, is situated on the edge of the shoal water,  $2\frac{3}{4}$  miles W. by S. of Basque island, and  $2\frac{1}{2}$  miles off the mainland. The group consists of one large island, 37 feet high, and of several small islets. It is of grey-wacke slate covered with grass. The passage between Apple islands and the mainland is shoal and foul, and available only for small craft after the tide has risen considerably. A sandy spit extends from the southeast side of Apple island in a south-southwest direction, and dries to a distance of  $1\frac{3}{4}$  miles from the island, leaving a shallow passage about 5 cables wide between it and the drying flats of the mainland.



**Anchorage.**—Small craft can obtain comfortable anchorage, fairly sheltered from westerly winds, just on the edge of the 3-fathom contour off the east end of Apple island, at a distance of about 4 cables from the end of the island. To pick up this anchorage, ile Ronde should be seen open its own breadth of the southeast side of Apple island, and bearing about S.W.  $\frac{1}{2}$  W.

**Shoal water.**—The 3-fathom contour along the coast here is practically a line between N.E. Razade islet and the northern point of Green island reef, extending a little abreast of Basque island, and the ground is generally foul between the 3-fathom contour and the drying line, except abreast of Trois Pistoles.

**Green island road.—Anchorage.**—The ground to the eastward of Green island reef is known as Green island road. Excellent anchorage in westerly winds can be picked up here; a good position being with Ile Verte church bearing about S. by E., seen over the islet 22 feet high attached to the northeast end of Green island, and with the northwest coast of Green island in line with the lighthouse. The depth is about 6 fathoms; holding ground, stiff mud. Smaller vessels can anchor closer in, with the northwest coast of Green island seen open to the southward of the lighthouse.

**GREEN ISLAND** lies northeast and southwest in a direction parallel to the coast, abreast of the town of Ile Verte. It is about 6 miles long, and one mile broad in the widest part, and is thickly wooded on its upper ridges, the trees of which are about 300 feet above high water. Narrow reefs of rocks extend off the northeast and southwest point to a distance of about half a mile. The northeast point of the island consists of a long ridge of slate, which at high water is broken up into a series of small islets about 20 feet high.

**GREEN ISLAND REEF**, with the 3-fathom contour adjacent to it, extends from the northeast end of Green island to about N.E.,  $1\frac{4}{10}$  miles from the lighthouse. The reef which dries in many places, fills the bay between the northeast point of the island and the point on which the lighthouse is situated. The outermost drying rock of the reef lies towards its northeast



edge, bearing N.E., distant 9 cables from the lighthouse, but shoal water extends to a further distance of half a mile in the same direction. From thence the shoal water trends to the eastward, joining up with the shoals connecting Green and Apple islands at a distance of about 3 cables from the northeast end of Green island.

The northwestern side of the reef is fairly straight, and runs from the northeast extreme to close westward of the lighthouse, from which it is little more than a cable distant.

**CAUTION.**—On approaching this reef from the eastward and northeastward, ample warning is given by the lead, but northwestward the water is very deep at a distance of about 7 cables, and it must be remembered that the ebb tide sets strongly northeastward across the reef, and the beginning of the flood southwestward on to it.

**Clearing line.**—The northern side of Basque island, bearing E.  $\frac{3}{4}$  N., with the third dip in the hills of the high land of Bic seen open northward of it, leads clear of, but close to the northern edge of Green island reef. See clearing line G on Can. chart No. 204.

**Tides.**—It is high water at Green island, 35 minutes, and low water 39 minutes later than Father point. Springs rise  $16\frac{1}{2}$  feet, neaps rise 11 feet.

**LIGHT** (Lat.  $48^{\circ}-03'-00''$  N., Long.  $69^{\circ}-25'-20''$  W.).—A white circular tower, 56 feet high, exhibits, at 54 feet above high water, an *occulting white light*, visible 10 seconds, eclipsed 10 seconds, which should be seen from a distance of 13 miles in clear weather. The lighthouse is situated in the centre of a low point projecting to the northwestward from Green island, and when seen from some distance northeastward, appears to be detached from the island. A brown dwelling is attached to the lighthouse.

**Fog signal.**—An explosive fog signal is fired every *fifteen minutes* during fog and snowstorms. If a vessel's fog signal is heard in dangerous proximity, an additional signal is fired and repeated every *five minutes*, whilst the vessel's fog signal continues to be heard.



**Beacon.**—To the south and east of the lighthouse, and distant  $2\frac{1}{2}$  cables from it, is a white beacon, which when in line with the lighthouse and bearing S. by E.  $\frac{1}{2}$  E., leads eastnorth-castward of the tail of the Red islet bank.

**Rock.**—A small isolated rock, which dries 11 feet, lies North, distant  $1\frac{1}{4}$  cables, from the lighthouse. There is good water for boats all around this rock.

**Coast.**—The northwestern coast of Green island, from the lighthouse to the southeast point, is fairly steep-to. The high-water line is fringed by ridges of slate, and about 100 yards back of it low wooded earth cliffs run along the greater part of the island. A road runs nearly the whole length of the island on the southeast side, with occasional trails cutting through to the northwest side; on both sides of this road are situated cultivated lands.

On the southeast side of the island and about 2 miles from the southwest point, is situated a church, the spire of which can be seen in all directions except from the northeast, when it is hidden by the trees of the ridge running the length of the island.

The southwest point of Green island is low and grassy. A drying reef, the outer end of which appears detached except at lowest tides, extends 6 cables W. by S. from the southwest point, curving slightly northward beyond the general direction of the coast, so that from the western end of the reef the lighthouse bears N.E. by E.  $\frac{1}{4}$  E. The northern side of this reef is steep-to, there being 10 fathoms of water within half a cable, and 20 fathoms at a distance of 4 cables.

**CAUTION.**—Both flood and ebb tide set strongly across this reef, and must be guarded against. During strong floods there is usually a heavy tide rip off the reef, caused by the meeting of the streams coming along both sides of Green island.

**Anchorage.**—There is good anchorage, giving shelter from easterly winds, in from 6 to 8 fathoms, mud bottom, between the southwest end of Green island and Cacouna rock, with the latter bearing about S. by W., distant 7 or 8 cables. Small



vessels can anchor in 3 or 4 fathoms, half a mile northeast of this position, escaping there the heavy tide eddies which are occasionally felt at the outer anchorage.

Green island is separated from the mainland by a channel one mile wide in its narrowest part. With the exception of a narrow gut which runs from the southern anchorage to abreast of île Ronde, the channel is quite dry at low water. In this narrow gut, abreast of the southwest end of the island, is a deep hole about  $1\frac{2}{10}$  miles long, and one cable broad, which has a depth of 4 fathoms at low water.

A great number of fish-traps, some half a mile in length, stretch from both shores towards the centre of the channel; these make the navigable part of it so narrow, that it is difficult for a vessel to tack through. The flats on both sides of the channel dry from one to 8 feet, and are composed of stiff mud and gravel. Carts occasionally cross between the island and the mainland at low water.

The northeast point of Green island joins up at low water with the flats extending from the mainland. There are a great number of large boulders between the northeast point of the island and île Ronde. Small craft making for the pier at Ile Verte, should keep the spire of the church open to the eastward of the shed on the end of the wharf. This should only be attempted towards high water.

**Ile Ronde**, a small wooded island, 77 feet high, lies on the mud flats, S. by W.  $\frac{1}{4}$  W., distant  $1\frac{9}{10}$  miles from the small islet (22 feet high) off the northeast end of Green island.

**Ile Verte**.—The town of Ile Verte is situated on the mainland, S. by E. of the northeast point of Green island. The church of St. Jean Baptiste is situated on the low land under the town; it is a grey building with a red roof and a grey spire. The population of Ile Verte was 2,276 in 1921.

**Government wharf**.—A causeway is run from the high line along the grassy swamps, and from this a wharf over 1,200 feet long extends. The shallow drainings of rivière Verte run past the head of this wharf, which has about 12 feet alongside it at high water.



**Fog bell.**—A hand fog bell on outer end of the wharf is privately operated for use of boats engaged in the local sea moss industry.

**Leading Lights.**—Front light (*Lat. 48°-01'-25" N., Long. 69°-20'-42" W.*)—On the wharf, 312 feet from its outer end, is erected a lantern on a mast, that exhibits from a height of 15 feet a *fixed red* light, visible 8 miles. A diamond-shaped daymark is attached to the mast. Back light.—On the low ground, 360 feet S. by E. from the front light, is a wooden frame tower, that from a height of 26 feet exhibits a *fixed red* light, visible 10 miles. A white, square, wooden daymark is attached to the frame. The alignment of these two lights leads through the narrow channel to the wharf.

Small craft making for the wharf of Ile Verte, having rounded the reefs off the N.E. end of Green island should keep the spire of St. Jean Baptiste church bearing about S. by E., and open well to the eastward of the shed on the wharf. Passage over the flats can only be attempted towards high water.

**The shore** northeastward of Ile Verte is low, and bordered by grassy swamps. Earth cliffs, 50 to 100 feet high, run along just back of the shore. Southwestward of Ile Verte, the land is low and grassy, drained by rivière Verte, which disperses itself on the mud flats. The shore of the mainland abreast of the southwest end of Green island is low, but is backed by a narrow coast ridge of wooded hills about 280 feet high. Southeastward of this ridge, the land is low, rising gradually in grassy slopes to the back ridges.

(*For continuation of South shore see page 133.*)

(*For Father point to Red islet see page 115.*)

**RED ISLET BANK** is an extensive stretch of foul ground lying in a northeast and southwest direction,  $3\frac{1}{2}$  miles long between the 5-fathom contours, and 2 miles broad about the middle. It is situated in the middle of the river about half-way between Green island and the mouth of the Saguenay, and is the northeastern termination of the banks which extend for about 30 miles southwestward, dividing the river into the north and south channels.



**RED ISLET**, the highest portion of the reef, is a shingle bank, with a height of about 17 feet above high water, situated N.W. by W.  $\frac{1}{4}$  W.,  $5\frac{3}{10}$  miles from Green island lighthouse, on the southerly edge of Red islet bank. There are several buildings on the islet, a flagstaff, and two beacons which are used for placing the buoys in the district. A boatslip and a windlass on the northeastern point of the islet can haul up small boats from 20 to 30 feet long.

**Foul ground.**—Drying ridges extend northeastward and eastward from Red islet, and detached from the main body of the reef  $1\frac{1}{2}$  miles northeastward are several rocks drying 3 to 6 feet. The northern extreme of the 3-fathom contour off Red islet bank, lies N.  $\frac{1}{2}$  E., distant  $1\frac{1}{2}$  miles from Red islet lighthouse. The northeastern extreme of the 3-fathom contour of the bank lies about northeast, distant  $2\frac{3}{10}$  miles from the lighthouse. The ground inside the 3-fathom contour is very foul.

On the southern side, Red islet is fairly steep-to, but to the westward just detached from it, there is a ledge of rocks with less than 6 feet over them at low water, and westsouthwest the 3-fathom contour extends to a distance of nearly three quarters of a mile.

**LIGHT** (Lat.  $48^{\circ}-04'-06''$  N., Long.  $69^{\circ}-33'-10''$  W.).—A circular grey stone tower, 64 feet high, with a red lantern and a white dwelling with a brown roof attached, on the middle of Red islet, exhibits at 65 feet above high water, a *fixed group flashing white* light showing *four flashes at three seconds intervals every twenty-four seconds*; the light should be seen from a distance of 12 miles in clear weather.

**Buoys.**—A red conical buoy, No. 34B, with flag, is moored in about 8 fathoms of water on the northeast end of Red islet bank, with Red islet lighthouse bearing about S.W.  $\frac{1}{2}$  W., distant  $3\frac{1}{10}$  miles.

A red conical buoy, No. 36B, with a flag, is moored close to the eastern edge of the drying reef attached to Red islet with the lighthouse bearing about West, distant  $1\frac{3}{10}$  miles.

**Leading mark.**—The beacon southeast of the lighthouse on Green island in line with the lighthouse and bearing S. by E.  $\frac{1}{2}$  E., leads in good water across the tail of Red islet bank.



**LEADING LINE.**—In using the channel between Red islet bank and the dangers off the mouth of the Saguenay, the north-western side of White islet should be brought into line with the eastern summit of Hare island (marked, 'about 200 feet' on the chart), bearing S.W. (See leading line B on Can. chart, No. 204). This line leads in good water over half a mile northward of the edge of the bank, but a vessel must be carefully watched, and the Hare island summit should not be seen to the southeastward of White islet. It must be remembered that the ebb tide from the Saguenay sets hard on to the reef.

**Clearing line.**—White islet bearing S.W. by W., and seen open north of Hare island at least twice its own breadth, clears the southeastern side of Red islet bank. (See leading line E on Can. chart No. 204).

**Clearing mark.**—Pointe Noire low light in line with Lark islet lighthouse (disused), bearing N.W. by N., leads clear southwestward of the dangers off the southwest side of Red islet. (See leading mark D on Can. chart No. 204).

**LIGHT-VESSEL.**—A steel lightship with two masts is moored to the eastward of Red islet bank, in about 20 fathoms, with Red islet lighthouse bearing about W.S.W., distant  $3\frac{3}{10}$  miles. The hull of the vessel is painted red with 'Red islet No. 3' in white letters on each topside. A cluster of *fixed white* electric lights encircle the foremast, visible all around the horizon and elevated 34 feet above the water. The lights should be seen from a distance of about 10 miles in clear weather.

**Fog signal.**—During thick or foggy weather and snowstorms, the lightship sounds a steam fog whistle for periods of *ten seconds*, with an interval of *fifty seconds* between each blast.

**Submarine fog bell.**—A submarine bell, fitted to Red islet lightship, during thick weather strikes the lightship's number 3, every *fourteen seconds*, thus: three strokes at intervals of *two seconds*; interval, *ten seconds*. There may be slight variations in these intervals.



**Tidal streams** along Red islet are very strong, running up to 6 and 7 knots at springs. The ebb sometimes sets strongly northward across the foul ground southwest of Red islet. On the northwestern side of the bank, when the ebb from the Saguenay meets the main body of the ebb, and they together strike the shoal water tremendous tide rips are set up, which are dangerous for boats and small craft. Observations extending over a considerable period were made at Red islet light-vessel to ascertain the direction of the stream at various stages of the tide. The result of these observations is shown by the tide arrows on Can. chart No. 204.

*(For continuation of description of islands, reefs, banks, etc. between North and South channels see page 155.)*

*(For directions Father point to Red islet see page 115.)*

Variation  $22^{\circ} 15'$  W.



## CHAPTER X

### NORTH SHORE

#### POINTE DES MONTS TO PORTNEUF

*(Continued from page 50)*

The land, which is rather low on the northeastern side of pointe des Monts, begins to rise immediately westward of that point, and granitic hills, very sparingly wooded, and not above 1,000 feet in height, form the north shore of the river as far as St. Giles point, 31 miles westward. This shore is bold, there being little warning by the lead.

From St. Giles point to near cape Colombier, there is a complete change in the character of the coast, which is that of a comparatively low sandy shore, wooded, fronted at low water by extensive flats of sand and gravel off which there is practically no anchorage. The 100-fathom line which is barely one half mile off at pointe des Monts, gradually increases its distance from the shore to 3 miles off cape St. Nicholas,  $5\frac{1}{2}$  miles off Manikuagan point and  $3\frac{3}{4}$  miles off Bersimis point.

**Ste. Augustine cove**,  $1\frac{1}{2}$  miles westward of pointe des Monts, is a small cove occasionally used for shelter from easterly winds by small craft. The best anchorage is in 10 to 12 fathoms, clay bottom, off the middle of the bay, with the concrete fog horn building, on pointe des Monts, in line with the eastern point of the bay bearing S.E. by E.  $\frac{1}{4}$  E.

**Godbout river**, 9 miles westward of pointe des Monts, flows into the sea at a sandy point and sand bay, extending nearly half a mile from its entrance point. It dries in great part at low water and is bold to seaward. At low water springs only 2 feet of water remains on the bar, and at high water springs about 14 feet.

**Godbout village**, with a population of 168 in 1921, is built along the shore, northeastward of the river. There is a chapel and telegraph office here, and it is the site of a pulpwood industry.

Variation  $25^{\circ} 50'$  W.



**Leading lights** (*Lat. 49°-18'-50" N., Long. 67°-36'-10" W.*). Two *fixed red* lights, shown from poles with square, slatted day-marks attached, are located in Godbout, about half a mile northeastward of the river. Their alignment is N.W. by N.

**Fog horn.**—A hand fog horn at the lightstation answers signals from vessels in foggy weather.

**Communication.**—A vessel of the Clarke Steamship Line from Quebec calls at Godbout weekly during the season.

**Wharf.**—A wharf, about 400 feet long, with 18½ feet of water at its outer end, is located in the bottom of the bay. Modern pulpwood loading machinery is installed on the wharf.

**Anchorage.**—Vessels usually anchor in the alignment of lights, or within a quarter of a mile of it, as soon as depths of 15 fathoms are picked up. It is a good precaution to approach slowly, with anchor down at that depth, as the bank is very bold. Small steam vessels occasionally anchor off the mouth of the small stream in the northeast corner of the bay, on the edge of the 20-fathom contour, with the stream bearing N.E. ¾ N. There is good shelter there even from easterly winds. It is not, however, recommended to sailing vessels, as, should the wind become southerly a heavy sea would set in. The usual anchorage, close to the leading light, affords good protection in westerly and southwesterly winds. The tidal streams here are weak and irregular, frequently setting towards the shore, coming with long rippings parallel to it.

**Directions.**—From eastward, at night, after passing *pointe des Monts*, Godbout leading lights can be followed as soon as picked up.

From westward, at night, keep *pointe des Monts* visible E. ½ S. When either of the leading lights bears about north, alter course to N. by E. ½ E. till on the alignment of lights, when a ship would be in about 40 fathoms of water, about 5½ cables from the anchorage. The alignment of the lights is then followed till suitable depth is picked up.

When standing close to the shore, to clear the spit off the mouth of Godbout river, keep *cap Rouge* well open northward



of the eastern point of St. Nicholas harbour, till the Godbout chapel bears N.  $\frac{3}{4}$  W., then steer N.N.W. till on the alignment of lights.

If leaving the anchorage, bound westward, steer S.  $\frac{1}{2}$  E. till pointe des Monts light is seen, when course may be altered as desired.

**St. Nicholas harbour**, lies westward  $6\frac{1}{2}$  miles from Godbout river. It is a narrow inlet extending northwestward  $1\frac{5}{8}$  miles between granitic hills 500 to 700 feet in height and is completely landlocked. A vessel may be placed on shore and repaired on the southwestern side. A vessel can lie alongside the rocks. There is a depth of  $9\frac{1}{2}$  fathoms in the deepest part of the harbour, sandy bottom.

The greatest breadth of the harbour is 380 yards. At the entrance it is only 150 yards. There is a narrow channel into the harbour close to the western point. It is about 60 yards wide, and has a minimum depth of 5 feet at low water springs. At neap tides there is 12 or 13 feet, and at springs  $17\frac{1}{2}$  feet. The bottom in the entrance is sand, with some few large stones upon it, which can be seen if the tide is not high enough to pass over them. The entrance is in the middle of a small bay, three quarters of a mile wide, and rather more than a quarter of a mile deep to Cross point, a rock point with a small wooden cross on it, which projects into the bay.

An extensive spit of sand and boulders, extends southwestward nearly  $3\frac{1}{2}$  cables from the eastern point of the bay, and continues northward to the harbour entrance. The spit covers at half tide with the exception of a very large boulder near its southern end, which never completely covers. The spit shelters the harbour in southerly and easterly winds. The spit on the western side, extends half a cable from shore.

The anchorage is about midway between these spits, and is about 3 cables wide, with good holding ground, in about 8 fathoms of water, with Cross point bearing N. by E.  $\frac{3}{4}$  E., and the eastern point of the bay bearing E.  $\frac{1}{4}$  S.

**Directions.**—With a sailing vessel, west-southwesterly wind is the safest for entering, for the entrance and the bay outside are quite smooth. This wind will seldom take a vessel in, but it usually enables her to shoot so far within Cross point

Variation  $25^{\circ}$   $40'$  W.



that a line may be sent ashore, or a kedge ahead, to warp into the harbour. Entrance should be made in the last quarter flood; then if the ground is touched no damage is caused, and there is time to warp in before the tide begins to fall. A south-easterly wind blows right into the harbour and is consequently favourable, but there is generally heavy sea with this wind, in which case the attempt would be dangerous. Northwesterly wind blows right out of the harbour and often with great violence.

To enter the harbour from off the mouth of the bay, bring Cross point to bear N.N.W.  $\frac{1}{4}$  W., then steer so as to leave it between 30 and 50 yards on the port hand. If the wind permits, run in at the same distance from the western shore until the water deepens, but should the wind fail, or there be light baffling flows out of the harbour, as often happens during westerly winds, send a line to the western shore, or anchor under foot, as soon as the way is lost, and warp into deep water.

The bar commences at Cross point, and continues 2 cables within it. The channel is rendered narrow by the shoals off the eastern shore. To have as much room as possible anchor a little above the wharf and mill on the eastern shore.

To go to sea, wait for a northwesterly wind; or take advantage of the land wind in the early morning, which often occurs in fine weather when westerly winds prevail; or warp out in a light breeze or calm to a position at which sail can be made.

**Water.**—There are several streams on the eastern side of St. Nicholas harbour where water can be taken. It can also be taken from two small rivers, at the head of the harbour, at high water.

**Tides.**—High water full and change occurs at St. Nicholas harbour at 2h. 17m. Springs rise  $12\frac{3}{4}$  feet, neaps rise 8 feet. Neap range is  $4\frac{1}{2}$  feet.

**Cape St. Nicholas**,  $2\frac{3}{4}$  miles southwestward from Cross point, is a large bare granite point, which is very bold. From cape St. Nicholas, the shore trends northwestward  $4\frac{1}{2}$  miles to Mistassini point.

**Sheldrake river** is a small stream about 3 miles northwestward of cape St. Nicholas. A shoal of gravel with large boulders extends about  $3\frac{1}{2}$  cables southward from the mouth of the river.



**Franklin**, about one mile westward of the river, consists of a pulpwood mill, and around it the houses of the employees. A telegraph office is located here.

**Wharf**.—A wharf extends from the shore running southwestward for about 250 feet and then westward about 300 feet. On the north side of the wharf there is a depth of about 15 feet at low water springs, and deeper water on the southern side. When on the north side of the wharf, a vessel is sheltered from all winds, but in southwesterly gales heavy seas roll in, and there is little sea room to get out.

**Leading lights**, *fixed red*, in line bearing S.W., lead to the wharf from seaward. The front light is on the wharf at the angle. The back light is on the high bank back of the wharf. The alignment of lights leads about one half mile eastward of Mistassini point. The lights are privately maintained.

**Mistassini river**, just eastward of the point of the same name, is a small stream flowing into a bay about three quarters of a mile wide and one half mile deep, drying out completely at low water, with large boulders on its flat.

**St. Pancras cove**, three and a half miles westward of Mistassini point, is about  $3\frac{3}{4}$  cables wide at its entrance point, narrowing to  $1\frac{1}{4}$  cables, and widening again to 2 cables, where vessels anchor. The shores of the cove are steep and rise to about 800 feet. There is deep water, and it affords good shelter to small steamers. With easterly winds they anchor in about 15 to 20 fathoms. The bottom is fine sand. There is a waterfall on the western side, the water of which is good.

There is a smaller cove westward of the entrance point.

**CAUTION**.—**Comeau rock**, a circular rocky patch with a least depth of water of 9 feet at low water springs, lies  $6\frac{1}{2}$  cables S. by E.  $\frac{1}{2}$  E. from the western entrance point.

**Clearing line**.—The waterfall, seen open of the western shore of the bay, leads into the cove clear of Comeau rock.

**LIGHT** (*Lat.  $49^{\circ}-15'-20''$  N., Long.  $68^{\circ}-04'-55''$  W.*).—On St. Pancras point, about  $2\frac{1}{4}$  miles westward of St. Pancras cove, is shown from a square lantern rising from the roof of a square white wooden dwelling, at 82 feet above water, an *occulting white* light. The light is unwatched.

Variation  $25^{\circ} 30'$  W.



**English bay**, between St. Pancras point and St. Giles point, which lies  $3\frac{3}{4}$  miles southwestward, is not a good anchorage, as the water in it is deep and a heavy sea rolls in with easterly winds. Its shores are high and rocky.

**Anchorage** may be obtained off its western shore, in 12 to 17 fathoms, sheltered from all but easterly winds, but for a sailing vessel, should a strong wind from that quarter set in, it would not be possible to weather the eastern side of Manikuagan shoal during the flood stream.

**Manikuagan river**.—St. Giles point, the northeastern entrance point of Manikuagan river, is high and rocky. Pointe Lebel, the southwestern entrance point of the river is low and thickly wooded, with a broad sandy beach. The river flows through narrow and winding channels between shoals that dry at low water, and over a bar that extends from St. Giles point, to the northeastern end of Manikuagan shoal.

The shallow channels, between shoals, unite in the inner entrance of the river, at 6 miles westward of St. Giles point, which there, is narrow and about 4 fathoms deep. The falls, where the river discharges a great body of water down a narrow and sloping channel is 3 miles farther up, northwestward. A boat can approach close to them.

**Telegraph office**.—A small settlement at point Lebel had, in 1921, twenty-eight resident inhabitants. It contains a telegraph office.

**Anchorage**.—The principal channel into the river is on the northern side of its entrance, Manikuagan hole, a deep place in the channel, close to St. Giles point, and extending  $1\frac{1}{4}$  miles within it. It is  $1\frac{3}{4}$  miles long, and about 4 cables wide, with a depth of 3 to 5 fathoms, mud bottom.

Although it appears open to easterly winds, no swell of consequence rolls into it, and a vessel would be there in safety. To get there, the bar which extends 2 miles eastward from St. Giles must be crossed. It has 7 feet at low water springs and its seaward side is very bold, there being 30 fathoms, sand bottom, close to it, and 50 fathoms, mud bottom, at the distance of a



mile. The bar then sweeps round till it joins Manikuagan shoal. The latter is dry at low water for nearly 5 miles E.  $\frac{1}{4}$  N. from Lebel point.

**Directions.**—If entering the river from necessity, while seaward of the bar, bring St. Giles point to bear W. by N. When the head of English bay bears north the bar is close to. Proceed over it on the same course for about a mile, till the head of English bay bears N. by E.  $\frac{3}{4}$  E., then change the course to W.  $\frac{3}{4}$  N. to clear St. Giles point by about 2 cables. When the points on the western shore of English bay come in line, bearing N.N.E.  $\frac{3}{4}$  E., the vessel should be in the middle of Manikuagan hole, in 3 or 4 fathoms at low water.

**Tides and tidal streams.**—It is high water, full and change at 2h. 25m. Springs rise 12 feet, neaps 7 feet. The ebb stream setting eastward, runs out over the Manikuagan bar at the rate of about  $1\frac{1}{2}$  knots, the flood setting westward is nearly as strong.

**Manikuagan point**, S.S.W.,  $3\frac{1}{4}$  miles from pointe Lebel, and the eastern point of the Manikuagan peninsula is low and thickly wooded, with a broad sandy beach extending to Outardes point, a distance of 12 miles.

**Manikuagan shoal**, is the name given to the sand bank, drying at low water and fronting the Manikuagan peninsula from the mouth of Outardes river to English bay. It extends  $4\frac{1}{2}$  miles from northeastward of pointe Lebel, and about the same distance westward of Outardes point, where it is known as Outardes shoal. It is bold, there being depths of over 20 fathoms within 5 cables of the eastern edge of the bank. Southward, there is more warning by the lead. On the southern side of the peninsula the shoal dries from one to  $1\frac{1}{2}$  miles from the shore.

**Clearing mark.**—St. Pancras cove, bearing N.E. by N. leads along the eastern side of Manikuagan shoal in depths of 40 fathoms or over, clearing the shoal by a mile. The ebb tide sets on the shoal.

**Light-and-bell buoy.**—A cylindrical red light-and-bell buoy, No. 22B, is moored in 40 fathoms of water off the southeastern extremity of Manikuagan shoal.



**Telegraph office.**—There is a telegraph office at Outardes point.

**Tidal streams.**—The tidal streams are fairly regular and not very strong along Manikuagan shoal; the maximum rate of either stream is about 2 knots. There is often a heavy sea, particularly in a weather tide off the shoal, and great rippings are very common off its eastern and southern parts, where they have been observed to move faster than the tidal streams. The rippings often give the stream an appearance of rapidity which does not exist.

**Outardes river** with its mouth northward of Outardes point flows southwestward into Outardes bay. The river can be ascended by boats to the falls which are over granite rocks and are 7 miles within the point. These falls are only  $1\frac{3}{4}$  miles from Manikuagan river. A portage joins the two rivers above the falls. Outardes river is entered by several intricate and narrow channels, through Outardes shoal, in which there is only 2 or 3 feet at low water. The water of the river holds a white earth in suspension and it frequently covers the whole of Outardes bay, floating on the heavier sea water, and giving the bay the appearance of being shoal. A vessel passing through this fresh water displaces it, leaving a blue streak in its wake.

**Outardes bay** lies between Outardes point and Bersimis river point. There are several islands in the bay, the most conspicuous of which are a bare white granite rock, 75 feet high, and a red bare rock, 50 feet high, both lying in the northern part of the bay.

**Papinachois river—Leading lights.**—At the mouth of this river, about 5 miles N. by E. of Bersimis point, is a small wharf from which schooners load small quantities of pulpwood. The narrow channel leading to the river is almost dry at low water, and is marked by *fixed white* leading lights, privately maintained.

**Anchorage.**—Good anchorage can be obtained in Outardes bay, in 14 fathoms water, mud bottom, with Bersimis point bearing S.W.  $\frac{3}{4}$  S., distant  $3\frac{1}{4}$  miles, and Manikuagan point



bearing E.  $\frac{1}{8}$  N. This position is two thirds of a mile from the 3 fathom edge of the shoal water on the western side of the bay. Small steamers can lie closer to the shoal to westward in 6 fathoms. This anchorage is excellent in westerly gales, and may be occasionally used by steamers bound up the St. Lawrence.

**Directions.**—Approaching this anchorage from the westward, beware of Bersimis river bar which is extremely steep. The rocky point, 5 miles northward of Bersimis point, bearing north or westward of that bearing, leads eastward of Bersimis river bar. After passing the bar, do not reduce the depth to less than 10 fathoms.

**Tidal streams.**—The rate of tidal streams seldom exceeds 2 knots and the flood is much weaker. The direction of these streams in the western part of the bay is reversed by the effect of the river, so that the flood sets north and northeastward, and the ebb southwestward and southeastward.

**Bersimis river** flows southeastward and enters the sea on the northern side of Bersimis point, which, for three quarters of a mile from its extreme, is low and bare sand. The northern entrance point is also sand and lies one mile northwest of Bersimis point, but this wide mouth of the river is closed by sands dry at low water, with the exception of a narrow channel. The river, for 3 miles within the entrance, is wide and full of sand shoals.

The river discharges a great volume of water especially in the spring. The water at 2 miles within its entrance is fresh enough for drinking at the last of the ebb. The banks are high and precipitous, being either granite or cliffs of sand and gravel over clay. The basin and the valleys between the hills are filled with these last named deposits which support a thick growth of trees of the spruce species. The breadth of the river varies from 1 to 3 cables and its depth is usually 3 to 5 fathoms. There is one place with a depth of 12 fathoms, but the depth of 2 fathoms is as much as could be carried up to the foot of the falls. At 6 miles up the river the channel is contracted by shoals of sand and boulders to the breadth of



100 yards for a distance of one mile. Through this narrow part the rate of the ebb is 4 knots, above it the rate is  $2\frac{1}{2}$  knots. Boats could row up this river to the foot of the falls 30 or 40 miles distant by the course of the river and a steamer could ascend it with ease, but the winds are generally too light and baffling between its high banks for a sailing vessel.

**Bersimis point** is low, sandy and difficult to be seen at night. At 2 miles from the point the land becomes wooded with spruce trees. Southward of the point a sand shoal extends three quarters of a mile from the sandy beach, yet it is so bold that the lead offers no warning, there being 60 fathoms, mud bottom, at one mile from the edge of the shoal. The whole shoal around the point is equally steep, so that caution is required in this vicinity, especially by vessels beating at night or in foggy weather.

**Leading lights** (*Lat.  $48^{\circ}-56'-10''$  N., Long.  $68^{\circ}-38'-10''$  W.*). *Fixed white* lights are shown from two white masts, each surmounted by a white diamond-shaped daymark, erected on the beach within the northern entrance point of Bersimis river. The masts are 360 feet apart, the outer mast is 20 feet and the inner 30 feet high. The lights in line bearing N.W.  $\frac{1}{4}$  W. were intended to indicate the channel into the river.

**Light-buoy.**—With the front leading light bearing N.W.  $\frac{1}{2}$  N. and distant about 2 miles, is located 100 feet south of the alignment of lights, a black light-buoy No. 23B which exhibits an *occulting white* light. This buoy is maintained by private interests and is liable to be moved at any time to meet requirements.

**Bar—Buoys.**—The bar is sand which dries in part at low water and shifts frequently, being completely open to southerly and easterly gales. It extends nearly  $1\frac{1}{4}$  miles eastward of Bersimis point. A bar has presently formed on the alignment of the leading lights, about one half mile out from the front light. Vessels entering the river must leave the alignment of the lights, when nearing a black cask buoy placed on the outside of the shoal, and make a detour to the eastward, which is marked by two black cask buoys, to round the shoal. Within the



bar the channel is nearly in the middle of the river, with depths of 3 to 4 feet at low water. Bersimis river is difficult to enter without local knowledge.

**Government wharf.**—A wharf, now in a dilapidated condition, is situated on the east side of the river near its outlet.

**Telegraph.**—There is a telegraph office at Bersimis.

**Marine signal station.**—Bersimis has a reporting Marine Signal Service station. (*See page xliv.*)

**Anchorage.**—Fair shelter from northeasterly winds might be obtained in about 10 fathoms with pointe Michel bearing E. by S., distant 2 miles.

**The shore** from pointe Michel, the southern extreme of Bersimis peninsula, trends westward 18 miles to Laval island, then southward 9 miles to Portneuf lighthouse. From Bersimis point the shore is low and sandy to Jeremy island, which is a very small rocky islet about 40 feet high, close to the mainland. There is a house on the shore, just back of the islet, and some conspicuous patches of white sand and clay close northward of the island. Shoal water extends one mile from shore and the anchorage is not good.

From Jeremy island the shore is rocky and broken and is backed by hills rising to 800 feet. A conspicuous ridge of white granite, 450 feet high, stands parallel to the shore, about 4 miles inland.

**Cape Colombier**, 5 miles from Jeremy islet, is a rocky peninsula, 140 feet high, with a small red islet on its western side.

**Gulnare shoal**,  $1\frac{1}{2}$  miles off cape Colombier, is a narrow ridge of granite rocks, extending 2 miles in a W. by S.  $\frac{1}{2}$  S. direction, with depths of 2 to 3 fathoms over it at low water.

**Clearing line.**—The northern end of Laval island, nearly in line with pointe Orient,  $5\frac{1}{2}$  miles W. by S. of cape Colombier, leads 3 cables southward of this shoal in over 25 fathoms of water. (*See clearing line "B" on Can. Chart No. 210.*) There are depths of over 20 fathoms close to the southern edge of this shoal, and 3 to 5 fathoms between it and the shore.



**Plongeur bay**, of which cape Colombier forms the north-eastern point, is shoal with its inner part full of rocks and dry at low water. There is a round rocky peninsula, about 150 feet high, on the western side of the bay.

**Wildfowl reef**, the outer part of which is W. by S.  $\frac{3}{4}$  S.,  $3\frac{1}{2}$  miles from cape Colombier, is a large bed of rocks extending three quarters of a mile from the shore between Plongeur bay and point Orient. There are 9 fathoms of water 3 cables outside the reef.

Caution is necessary when standing from the shore from Wildfowl reef to Gulnare shoal inclusive; the depth of 30 fathoms is close enough, but southwestward of the reef, until  $2\frac{1}{2}$  miles from Portneuf, vessels may stand in 6 fathoms at low water with safety.

**Laval island**, about 250 feet high, is round and rocky.

**Laval bay** is situated within Laval island,  $2\frac{3}{10}$  miles westward from point Orient. The bay is dry at low water. Vessels may stand in safety towards it, the water shoaling gradually from 10 fathoms at  $2\frac{1}{2}$  miles from the shore. There is good anchorage in 6 fathoms, clay bottom, off the cliffs southward of the bay.

**The shore.**—Clay cliffs commence at  $1\frac{1}{2}$  miles southward of Laval bay and continue for nearly  $5\frac{1}{2}$  miles, whence a long, narrow, sandy peninsula, with a clump of pine trees on it forming the eastern side of Portneuf river entrance, extends southward 2 miles.

**Sault au Cochon**, a small river with a village at its mouth, is situated immediately westward of Laval bay.

**Sore Foot islet**, about 35 feet high, is rocky and lies one cable off shore about  $1\frac{1}{2}$  miles southwestward of Sault au Cochon. It is dry between it and the shore at low water.



## CHAPTER XI

### NORTH SHORE

#### PORTNEUF TO BERGERONNES COVES

**PORTNEUF RIVER**, on the north shore of the St. Lawrence river about S.W.  $\frac{1}{2}$  S., 7 miles from Laval island, rises a considerable distance inland. The river flows out in direction about S.E.  $\frac{1}{2}$  E. between high clay cliffs and then turns abruptly southwest and runs between a long narrow sandy peninsula (Portneuf spit) and the mainland, finding its way to the sea through numerous shallow channels over the Portneuf sands. The channel between the spit and the land is nearly dry at low water, and rapids are encountered  $1\frac{1}{2}$  miles above the turn inland. Buoys, maintained by local authorities, are placed to show the deepest portion of the river inside the spit. The following lights in line should lead into the river from seaward, but the channel cannot be relied upon. Local knowledge, except for very small craft at high water, is absolutely necessary.

**Leading lights.**—For the assistance of small craft using Portneuf river, leading lights have been established on the sand cliffs abreast of the west end of Portneuf spit. The front light, *fixed white*, 52 feet above high water, is exhibited from a white mast with white shed at base, and bears about west from the lighthouse. The back light, also *fixed white*, 86 feet above high water, is exhibited from a white mast with white shed at base and diamond-shaped daymark attached. It is distant 323 feet N. by W.  $\frac{1}{4}$  W. from the front light. The position of the lights are subject to change to suit the changes in the channel.

**Portneuf village** is situated at the mouth of Portneuf river. It stands on the summit of a steep sandy bank facing Portneuf spit. There is a post and telegraph office, store and small sawmill at Portneuf, the sawmill only occasionally working. The population was 359 in 1921.



**Government wharf.**—A wharf at Portneuf is 232 feet long and dries at low tide.

**Portneuf spit**, a narrow, sandy peninsula 2 miles long, extends in direction S.S.W. from the foot of clay cliffs just northeast of Portneuf river. The spit is very low, with a clump of trees commencing at about one mile from the cliffs at the eastern end. High tides occasionally flow over the eastern neck of the spit.

**LIGHT** (*Lat. 48°-36'-30" N., Long. 69°-05'-16" W.*).—Situated on a small rise near the western end of Portneuf spit is a steel skeleton structure 64 feet high, painted red, surmounted by a white wooden watch room and a red lantern. The upper portion of the framework is covered with slats, painted white. From this lighthouse is exhibited, at a height of 58 feet above high water, a *fixed white* light, which should be visible from a distance of 13 miles in clear weather.

**Portneuf sands** are extensive drying sand flats with detached off-lying shoals, lying between the east end of Portneuf spit and Mille Vaches point. Mid-distance between Portneuf and the latter point these sands dry to a distance of  $1\frac{1}{2}$  miles from the shore. The drying banks contract towards Portneuf spit, where the drying line is 5 cables from the beach, and to Mille Vaches point, where the banks are dry one mile from the shore.

**Shoals.**—Lying nearly parallel with Portneuf spit but trending a little easterly are several detached shoal patches with 12 to 15 feet over them at low water. The western end of these shoals lies about E.S.E., distant three quarters of a mile from the lighthouse and 6 cables from the high water line of the spit. Off the eastern end of Portneuf spit at its junction with the clay cliffs, shoal water lies  $1\frac{4}{10}$  miles from the shore.



**Caution.**—Portneuf sands are fronted by very little shallow water, and between the bearings east from Portneuf lighthouse and south from Mille Vaches point, 30 fathoms and over will be found within 6 or 7 cables of the drying line. Therefore when navigating in this vicinity it must be realized that the lead gives little warning. The safest rule is to give the sands a wide berth. It is impossible to give clearing lines which would be recognized by a stranger.

**Anchorage.**—Steamers occasionally lie off Portneuf to load lumber, but the anchorage ground is exposed to all winds and sea, except from northwest, and vessels must be prepared to leave at short notice.

**Directions for anchoring.**—The anchorage should be approached with the sandy fall of the clay cliff just east of Portneuf river, bearing N. by W.  $\frac{1}{2}$  W. On Portneuf lighthouse nearing west, speed should be reduced to dead slow. The lead should be kept going, and when the lighthouse bears about W.  $\frac{3}{4}$  S., 18 or 16 fathoms should be picked up and the anchor let go. This berth is about  $1\frac{1}{4}$  miles from Portneuf lighthouse and  $2\frac{1}{2}$  cables from the edge of the 5 and 3-fathom lines, which are almost coincident.

Small vessels can find shelter from westerly winds by anchoring between the shoals and the shore, with the sandy fall of the cliff on the above bearing and the lighthouse bearing S.W.  $\frac{3}{4}$  W. This is in about 4 fathoms with sand bottom.

After strong easterly wind a considerable swell may be expected to set into the anchorage, causing a bad surf on the shore.

**Tides.**—It is high water, full and change, at Portneuf at 2h. 26m. Springs rise 15 feet, neaps rise  $10\frac{1}{2}$  feet. High water is 2 mins., and low water 10 mins. later than Father point.

*(See Tide Tables for eastern coast of Canada.)*

**The shore.**—From the western entrance point to Portneuf river the shore trends in a southwesterly direction for  $4\frac{1}{2}$  miles to Mille Vaches point. The land back of the shore between



Portneuf and Mille Vaches point is well wooded and comparatively low, hills rising about 2 miles inland.

**Mille Vaches point**, about S.W. by W., 3 miles from Portneuf lighthouse, is low and sandy, with a clump of trees standing near the extremity. At highest tides this clump is separated from the land by a narrow channel of tide waters.

**Mille Vaches bay**.—Between Mille Vaches point and Escoumains islets (S.W. by W., distant 11 miles from the point) is a wide mouthed indentation known as Mille Vaches bay. The whole length of the bay is fringed by extensive mud and sand flats with, in the western portion especially, great numbers of large boulders. Off the deepest part of the bay these flats dry to a distance of over 2 miles from the shore.

With Mille Vaches point bearing about north the off-lying flats are steep-to, and no warning is given by the lead. Abreast of Mille Vaches village and thence southwest to just west of the line of beacons at Sault au Mouton, the ground is foul for some distance from the edge of the flats. Southwestward of this and to within a mile of the Escoumains islets the water shoals gradually and good anchorage can be obtained. On approaching the Escoumains islets the deep water gradually closes the shore, so that off the islets the 20-fathom line is but 2 cables from the edge of the drying flats.

**The shore** from Mille Vaches point trends N.W. by N. for  $2\frac{1}{2}$  miles, W. by N. one mile, and then S.W. one mile to the village of Mille Vaches. The land back of the shore in the first part of this distance is the comparatively low wooded land of the Portneuf peninsula. Salt marshes, which cover at high tides front the shore from the point to the village. From Mille Vaches village the shore trends in a general southwest direction to Escoumains islets. A road runs just back of the high water line, connecting Portneuf with the western villages and Tadoussac.

**Mille Vaches village** is built on a point of red granite and grouped about a conspicuous church, St. Germain, which is situated close to the inner end of the wharf which projects from the point. The principal part of the village lies along the road west



of this church. The population in 1921 was 1,172. A sawmill a sash and door factory and a telegraph office are located here.

**Government wharf.**—The wharf extends from the point for about 400 feet in a southeasterly direction. It has a T at its outer end, alongside which is about 8 feet of water at high water spring tides. The flats on the approach to the wharf dry out for a distance of 2 miles. The best line of approach is with the church bearing about N.N.W., as in this direction there are fewer boulders on the flats.

**Streams.**—Numerous streams flow into Mille Vaches bay. The largest of these is rivière Mille Vaches, the entrance of which is  $4\frac{1}{4}$  miles westward of Mille Vaches point; this river has a fall of 80 feet which is very conspicuous from a southeasterly direction, but is obscured from other directions by the entrance points and by lumber piles. Ground Hog brook and rivière Romaine are two smaller streams,  $3\frac{1}{2}$  and  $6\frac{1}{2}$  miles respectively from the mouth of Mille Vaches river.

**Sault au Mouton village,** a lumber settlement is situated at the mouth of Mille Vaches river. The smoke from the two thin chimneys of the sawmill is usually visible for many miles. A privately owned wharf is located here.

**Wharf.**—On the west side of the mouth of the river is situated a wharf, about 300 feet long, alongside which are loaded the flat bottomed scows used for lightering off lumber. The outer end of this wharf is marked by an electric light on a pole.

The draining of the river seaward across the flats is marked by tufted bushes (balises) placed along the western side of the channel. Close eastward of these marks about 10 feet of water should be carried at high water springs. Boats should not hug these marks too closely, as they are usually lashed to the larger boulders.

**Leading lights.**—For the use of small craft, the company working the mills has established, close east of the mouth of the river, two beacons, 400 feet apart, surmounted by electric arc lights. Their alignment, N.W.  $\frac{1}{2}$  W., leads from the outer edge



of the flats to a large boulder, marked usually by a white buoy, and past that to the outermost balise. From this the line of trees should be followed to the wharf.

**Caution.**—These beacons are not to be taken as navigation marks, being placed only for the use of local craft, and on their line the ground is extremely foul for a distance of nearly a mile from the outer edge of the drying flats. Boulders are very numerous on the flats abreast of Mille Vaches river.

**Anchorage.**—There is good anchorage in 10 to 12 fathoms off Mille Vaches river. This affords good shelter, out of the tidal streams, from all winds S.W. by W. to N.E. by E. In fact it is unlikely that a vessel would be obliged to leave the anchorage during summer months. To avoid the foul ground eastward the anchorage should be approached with the sawmill chimneys bearing N. by W. (or, if at night, the rear beacon light bearing N.  $\frac{3}{4}$  W.), and the anchor let go just before Portneuf lighthouse, bearing N.E. by E.  $\frac{1}{4}$  E., is shut in by Mille Vaches point.

This position is about one mile from the edge of the drying flats. A good berth can be picked up if desired about one third mile nearer the flats, with the sawmill chimneys on the same bearing. This would give about 9 fathoms, sand and mud. The probability is that the officials of the lumber company, with their local knowledge, would wish to place a vessel in the position most favourable for working cargo.

**The shore** from Mille Vaches river trends S.E. by E. for 2 miles, then S.S.E. a further 2 miles to Ground Hog brook. For one mile southwest of Mille Vaches river, and the same distance northeast of Ground Hog brook, the shore line is backed by wooded clay cliffs, the intervening portion being backed by fields of cultivated land, with numerous dwellings along the road.

At Ground Hog brook cordwood is piled, and schooners lie on the mud for loading. The best line of approach is marked by trees, and about 10 feet of water, at high tide, should be carried to the entrance of the stream.

**Escoumains islets**, two wooded islets, the northeastern lying S.W. by W.  $\frac{1}{2}$  W.,  $11\frac{1}{2}$  miles from Mille Vaches point, are about 60 and 100 feet to tops of trees. These islets, which are locally



known as Les islets Penchés, are on the flats 3 cables from the shore and about the same distance inside the edge of the drying line. On the edge of the flats about S.W.  $\frac{1}{2}$  W. distant a little over a mile from the northeastern Escoumain islet, are three bare rocks, the largest of these, the northeastern, being 17 feet high. The drying bank, which from here quickly closes on the shore, is steep-to, there being 50 fathoms of water within 2 cables of the edge.

**The shore** between Escoumains islets and Escoumains is backed by wooded clay cliffs. The road runs along the summit of these cliffs close to the edge.

**Escoumains.**—Escoumains bay lies S.W. by W., 5 miles from Escoumains islets. The settlement with a population of 986 in 1921 lies in the corner of the small bay immediately north of the point, at the mouth of Escoumains river. There is here a post and telegraph office, store, church, and a large saw and pulp mill. The church, an old wooden structure with a square tower at each seaward corner, is conspicuous. A small islet 9 feet high, lies close off the shore near the church. The bay dries out completely except for the shallow drainage from the river.

**Leading lights,** (*Lat. 48°-20'-52" N., Long. 69°-24'-20" W.*). A pair of beacons, each carrying a kite shaped day mark, is placed close southwest of the church. The front beacon, just back of the road, exhibits at a height of 30 feet a *fixed red* light visible 2 miles, and the rear beacon, lying W. by N.  $\frac{3}{4}$  N., 400 feet from the front one, shows at a height of 47 feet a similar *red* light. This range is supposed to lead into Escoumains, over the flats where the boulders have been cleared away. It is only for the use of craft having local knowledge.

**Government wharf.**—This wharf, which was 652 feet long and supported a light and foghorn, has been destroyed, its ruins are covered by about 2 fathoms water and marked by a red spar buoy distant about 200 feet from ruins. The light and foghorn have been discontinued.



An inner wharf, which has been constructed from waste lumber, lies on the south side of the river mouth, but is not used by vessels.

**Anchorage—Directions.**—A bank, very limited in extent, lies close northeast of the ruins of the outer wharf. It is on this bank that vessels anchor when loading. The depth is about 6 fathoms and the holding ground is poor, and the anchorage cannot be held with easterly winds. In picking up this anchorage the back beacon should be brought to bear about N.W. by W.  $\frac{1}{2}$  W. well open to the left of the front beacon. Running in slowly on this bearing, as soon as the red granite point just southwest of Escoumains comes in line with the point between Basque cove and Cave cove the lead should be kept going. As there are depths of well over 100 fathoms 3 cables from the outer edge of the bank, the lead does not give much warning. The beacons must not be kept in line or the bank will probably be missed and deep water found close to the edge of the flats. (See inset Can. Chart No. 204).

With indications of the approach of easterly winds it is advisable to be prepared to leave the anchorage at short notice. Vessels usually run for shelter to Tadoussac, or steam across to Bic anchorage.

**Tides.**—It is high water at Escoumains 6 minutes, and low water 16 minutes, after Father point. Springs rise  $15\frac{1}{4}$  feet, neaps  $10\frac{3}{4}$  feet.

**The shore** from Escoumains point trends S.W. by W.  $5\frac{1}{2}$  miles to cape Bon Désir, and is steep-to in all this distance with 100 fathoms water distant only one to 2 cables off-shore. In the several small indentations in this distance the shoal water does not project beyond the line of entrance points. Close S.W. of Escoumains point, in a shallow bight, are several reefs which show at various stages of the tide, all close to a line drawn from the red buoy marking the Government wharf ruins to the point south of it.

**Cave cove**, about three quarters of a mile E.N.E. of cape Bon Désir, is about 3 cables deep and 7 cables wide, drying right out at the entrance points. Schooners loading cordwood lie on the mud in the northern corner.



**Cape Bon Désir** is a granite point projecting but slightly from the general trend of the coast. Bon Désir bay, immediately southwestward of the cape is three quarters of a mile deep. Drying flats with a fringing ledge of huge boulders, extend to a line between the cape and Petites Bergeronnes cove, and are steep-to. There are several small bare islets lying on the flats. The shore is backed by low earth cliffs becoming wooded as Grandes Bergeronnes cove is approached.

**Grandes Bergeronnes cove**, the eastern entrance point of which bears W. by S., distant  $4\frac{1}{4}$  miles from cape Bon Désir, dries out at low water except in the shallow channels of the stream. Boulders have been cleared away in certain parts of the fringing reefs, and off the eastern entrance point, about  $1\frac{1}{2}$  cables inside the edge of the drying flats, is a small hole which has one fathom of water in it at low water. Yachts and small craft occasionally anchor in this and remain afloat at all times. The cove runs northeastward, is nearly half a mile wide at the entrance, gradually narrowing to the head,  $1\frac{1}{4}$  miles up. The cove is dry right out except in the shallow channels of the stream.

**Village.**—At the head is the village of Grandes Bergeronnes. It is on the main coast road between Tadoussac and Portneuf. A sawmill and mica mine are located here, but the principal industry is farming. The village has a church, school and post and telegraph office.

**Government wharf.**—This wharf is located on the west shore of the river Grandes Bergeronnes. It has a frontage of 110 feet and dries at low tide, except for the drainings of the stream itself.

**Leading lights.**—(*Lat.  $48^{\circ}-14'-00''$  N., Long.  $69^{\circ}-33'-28''$  W.*). The front light, *fixed white*, 31 feet above high water, is exhibited from a beacon 15 feet high, consisting of a triangular wooden framework, with a diamond-shaped, slatwork daymark attached; it is situated on the west side of Grandes Bergeronnes cove, 9 cables W. by S.  $\frac{3}{4}$  S. from the church. The back light, *fixed white*, 77 feet above high water, is exhibited from a similar



beacon, and situated 170 feet N.  $\frac{1}{4}$  E. of the front one. The lights in line lead into the harbour through a channel about 200 feet wide.

**Petites Bergeronnes cove** lies immediately southwestward of Grandes Bergeronnes cove. The eastern entrance point has on it a very conspicuous white boulder. On the seaward face of the small wooded peninsula between the coves are two very conspicuous triangular sand patches. These can be seen from a considerable distance, especially in the morning sun. The cove, which dries out well beyond the line between the entrance points, runs N.N.E. for  $1\frac{1}{2}$  miles and then turns abruptly northwest. A small sawmill is situated about half a mile beyond this bend. A considerable stream which drains a large tract of country has its exit here.

The drying flats in this vicinity have a fringe of very large boulders, but in the shallow channels of the streams of the two coves the ground has been cleared to enable small craft to enter towards high water.

Small vessels can obtain temporary anchorage in about 9 fathoms, distant about two cables from the western entrance point of Petites Bergeronnes cove. To pick up this very limited anchorage, approach with the point bearing N.N.E.  $\frac{1}{2}$  E., seeing right up the cove, and anchor directly soundings are picked up. There are depths of over 30 fathoms within  $3\frac{1}{2}$  cables of the point.

**TIDAL STREAMS.**—The tidal streams are regular, with a rate increasing as the comparatively narrow pass on either side of Red islet is approached. The flood is the stronger stream, the ebb being deflected towards the southern shore by the stream out of Saguenay river. The flood does not extend above 6 miles off the northern shore below Bergeronnes coves, and the closer to that shore the stronger is the stream; its rate off Mille Vaches point, where it does not extend far from shore, is  $1\frac{1}{2}$  to 2 knots; and off Bergeronnes coves 2 to 3 knots, at springs.



## CHAPTER XII.

### NORTH SHORE

#### BERGERONNES COVES TO CAPE BASQUE

**From Petites Bergeronnes cove** the north shore of the St. Lawrence river trends S.W. by W.  $\frac{1}{4}$  W., about 4 miles, and West for one mile to Moulin Baude. For  $2\frac{1}{4}$  miles in this distance the shore is comparatively low, rising to the coast hills, and is thickly wooded, but then commences to be high and bold. There are two very conspicuous white granite patches close together on the cliffs, S.W. by W.  $\frac{1}{2}$  W.,  $2\frac{3}{4}$  miles from the southern entrance point of Petites Bergeronnes cove. These patches are on the side of a sharp peak which rises to a height of 422 feet above high water, and which is noticeable from the northeastward and in the direction of cape Bon Désir.

From Petites Bergeronnes cove until near Moulin Baude, the shore is fringed by a drying reef about  $1\frac{1}{2}$  cables wide. This reef is edged by large boulders, and for two miles from the western entrance of Petites Bergeronnes cove is steep-to, but thence the shoal water commences to extend until the 5-fathom contour off pointe Vaches terminates in Vaches shoal nearly 2 miles from the shore.

At Moulin Baude, which is the exit of a considerable stream draining the valley between the back ranges, there are a few buildings and a sawmill which is worked by water-power. At times the waterfall is conspicuous, and the noise of the fall can be heard from a considerable distance. The sand formation of the Saguenay district, the high clay cliffs and sand ridges of which are very conspicuous from seaward, commences here. These cliffs trend about S.W. by W.,  $1\frac{2}{3}$  miles toward pointe Vaches.

**A shoal**, with 18 feet over it at low water, lies on the edge of the 5-fathom line off Moulin Baude, with pointe Vaches bearing W.  $\frac{1}{2}$  S., distant  $2\frac{1}{4}$  miles, and  $1\frac{1}{2}$  cables southeast of this shoal is a head of 28 feet surrounded by depths of 7 and 8 fathoms.

Variation  $22^{\circ}$  W.



**Anchorage.**—There is anchorage off Moulin Baude for vessels of moderate draught in 5 to 7 fathoms, sand and mud, with the rocky point close east of Moulin Baude, bearing W. by N., distant  $1\frac{7}{10}$  miles, pointe Noire low light, bearing W.  $\frac{5}{8}$  S., being just seen open southward of pointe Vaches.

This is a very useful anchorage for vessels coming up under the north shore with a scant northwesterly wind at the end of the flood and close of the day, to wait for the next flood or for daylight, and also for vessels waiting for a wind to enter the Saguenay. The position given is 4 cables distant from the 3-fathom contour, about three quarters of a mile off-shore, and the water becomes deep close outside of it.

As before stated, the shoal begins to extend from abreast of Moulin Baude in the direction of Vaches shoal. The bottom is very uneven, with several patches of less than 3 fathoms between the 3 and 5 fathom contours, and a very deep hole in the narrow gut between the Vaches shoal and the 3-fathom contour off pointe Vaches.

**Pointe Vaches**,  $1\frac{1}{4}$  miles S.W. of Moulin Baude, is formed by precipitous clay cliffs 200 feet high and over. There are some peculiar V-shaped patches of brushwood on this cliff.

**Pointe Vaches reef**, as the rocks that dry 8 to 10 feet and lie 4 cables south of pointe Vaches are called, is upon the southern edge of the bank that uncovers and fronts pointe Vaches. A rock with only 9 feet of water over it, lies on the southeastern edge of the shallow bank fronting Vaches reef. It is situated S.E.  $\frac{1}{4}$  S., 5 cables from the reef, and N.E. by E.  $\frac{1}{2}$  E.,  $1\frac{1}{2}$  miles from Lark islet. From this rock the bank extends E. by N.  $\frac{1}{2}$  N., for a mile, with dangerous spots along its edge, so that when passing between it and Vaches shoal, care should be taken to keep Birch point clay cliff a little south of Lark islet lighthouse, W.S.W.—See leading line A on Can. plan No. 203. As soon as Tadoussac hotel comes in sight, N.W.  $\frac{3}{4}$  N., on this range, a vessel should haul up for the mouth of the river. Much of the strength of the ebb tide can be avoided by using this range.



**Vaches shoal**, is an extensive bank upon which are several shoal patches, situated eastward of, and detached from pointe Vaches reef and bank. The shoalest head of 12 feet is called Vaches patch, and lies S.E. by E.,  $1\frac{7}{10}$  miles from pointe Vaches, and E. by N.  $\frac{1}{4}$  N.,  $2\frac{3}{10}$  miles from Lark islet.

The southernmost spot of 18 feet lies S.W.  $\frac{3}{4}$  S.,  $4\frac{1}{2}$  cables from Vaches patch, and a head with 15 feet over it at low water lies  $1\frac{1}{4}$  cables E. by N., of this.

**Leading marks.**—To pass south of Vaches shoal keep pte. aux Alouettes (Lark point), a well-defined sand cliff, in sight, south of Lark islet lighthouse, W. by S.—(See leading line B on Can. plan No. 203.)

**Buoy.**—A red conical buoy, No. 94B, is moored in about 4 fathoms of water on the southern edge of Vaches shoal, about 4 cables southwest of Vaches patch; this buoy also serves to mark the northern side of the entrance to the Saguenay.

**Rocky patches.**—Two rocky patches lie to the eastward of Vaches patch, distant about  $1\frac{1}{3}$  miles. They are surrounded by very deep water, and the general depth on these patches is 9 fathoms, but there is  $6\frac{1}{2}$  fathoms near the middle of the westernmost of the two patches.

To the westward of pointe Vaches reef, the 3-fathom contour is nowhere more than  $1\frac{1}{2}$  cables from the shore, and it drops at once to very deep water, there being depths of over 20 fathoms within a few yards of pointe Rouge.

**Pointe Rouge; beacon.**—From pointe Vaches the shore trends about W. by N.,  $\frac{9}{10}$  of a mile to pointe Rouge, a projection of red granite which forms the eastern point of Tadousac bay. A white beacon is erected close to the high-water line on pointe Rouge, which in conjunction with other marks to be described later gives clearing lines for the various dangers in the district.

**Pointe Ilot**, lies W.N.W., distant  $6\frac{1}{4}$  cables from pointe Rouge. It is a bare, rocky islet, 10 feet high, joined to a small promontory 93 feet high, which forms the northwestern entrance



point of Tadoussac bay, and on which are a few stunted trees and a white triangular beacon which is used only for placing the buoys in the district.

**Government wharf.**—On the north side of the point there is a wharf, 183 feet long, having 31 feet water at low water close alongside with 6 fathoms a few feet off. There is a boat landing at the inner corner of the wharf and a road connects it with the Tadoussac hotel.

**Storm signal station.**—The Canadian Meteorological Service maintains a storm signal station on the summit of pointe Ilot. (*See page xlvii.*)

**Tadoussac bay; anchorage.**—Tadoussac bay lies between pointe Rouge and pointe Ilot. It is 5 cables wide between its outer points and 4 cables deep to the drying line. The harbour is completely sheltered by either land or reefs, but with north-westerly winds the gusts down the river are extremely strong, and the vessel must be watched that she does not drag her anchor down hill into deep water. Small vessels anchoring in the northeastern corner of the bay are completely sheltered.

The anchorage for deep-draught ships is in 16 to 18 fathoms hard sand and clay. Although the anchorage is quite out of the tidal streams, eddies set into the bay, which cause the vessel to swing around several times in the same tide.

**Directions for anchoring.**—Deep-draught vessels coming in to anchor in the bay, should approach from about S.S.E., keeping a conspicuous red brick house, which will be seen close to the yellow belfry of the English church, about on with the eastern tower of the hotel. Immediately on picking up soundings of 16 or 18 fathoms at low water, the anchor should be let go. If a vessel is going to stay any length of time, she would find it convenient to let go her first anchor a little sooner and to drop a second anchor close inshore on the same line, and moor. Comfortable anchorage for small vessels is to the northward of this position in 7 or 8 fathoms of water.

**Tadoussac village** is situated on a semi-circular terrace of sand and clay at the head of the bay, which is backed by high rugged hills of granite. It is the chief town of the Saguenay



county, and is a watering place much frequented by tourists in summer. The principal industry is farming. The village contains three churches, one of which is the oldest in Canada, having been erected in 1747. The Roman Catholic church, situated northeastward of the hotel, has a very conspicuous spire. The English church, which is only open during the summer months, is situated on the road between the village and the wharf. Tadoussac has three or four hotels, that of the Canada Steamship Lines, Limited being visible for many miles to the southeastward. Supplies in small quantities can be obtained here, and fresh water in any quantity can be taken from a stand pipe on the wharf in l'anse à l'Eau, on application to the village authorities. The resident population of Tadoussac was 470 in 1921.

**Communication.**—There is daily communication during summer months with Quebec, Chicoutimi and intermediate ports by steamer. In winter there is a mail service overland from the railway terminal, Murray bay, to Ste. Catherine, on the opposite side of the Saguenay. Weather and ice conditions permitting, a mail boat plies between Tadoussac and Ste. Catherine during the winter months. The mail stage leaves daily throughout the year for Bergeronnes and villages along the north shore. An office of the Government telegraph service is in connection with the post office.

**Beacon.**—There is a white triangular beacon upon the hill, 294 feet high, behind the Roman Catholic church. It is used in conjunction with one on pointe Rouge to lead small craft south of Bar reef in 11 feet of water. (See leading line E on Can. chart No. 203.)

**L'anse à l'Eau**, a small cove just westward of Tadoussac bay, has a wharf on its northern side, where local steamers call. There is a fish hatchery and salmon pond here, which are under the direction of the Provincial Government. A telegraph cable crossing the Saguenay is landed in this cove.

**Government wharf.**—A wharf at l'anse à l'Eau has a frontage of 187 feet by a mean length of 114 feet. It has a depth



of water of 15 feet at its southwest corner, but dries at the other corner. A timber approach, 600 feet long, leads to the wharf from the shore.

**Light.**—(*Lat.* 48°-08'-19" *N.*, *Long.* 69°-43'-30" *W.*).—A *fixed white* light is suspended from a mast on the outer end of the wharf at l'anse à l'Eau.

**Tides and tidal streams.**—It is high water, full and change, at Tadoussac at 2h. 55m. Springs rise 16½ feet; neaps, 12 feet.

Approximate height of the tide at every hour after low and high water ordinary springs:—

Locality	Hours after Low Water	Flood Tide	Hours after High Water	Ebb Tide
	H. M.	Ft.	H. M.	Ft.
At Tadoussac.....	0 0	L.W.	0 0	15.9
".....	1 0	1.0	1 0	14.9
".....	2 0	3.6	2 0	12.1
".....	3 0	7.4	3 0	8.6
".....	4 0	11.5	4 0	4.7
".....	5 0	14.6	5 0	1.8
".....	6 8	15.9	6 16	L.W.

As the whole rise and fall at neaps is less than at springs, the proportionate part of the rise and fall for every hour is also less, and an allowance must be made accordingly.

At Tadoussac, the duration of the flood stream is 6h. 8m., and that of the ebb, 6h. 15m. The flood stream enters the river at Tadoussac at the rate of 3 to 4 knots at springs. The ebb is very strong, being never less than 3 knots, and at spring tides or after freshets it sometimes attains a velocity of 7 knots. It sets strongly over Lark islet reef and pointe Vaches reef, and on meeting the ebb stream from the St. Lawrence sets up very heavy tide rips, so strong as to interfere with the steerage of a vessel. When these spring ebbs are opposed to a heavy easterly gale a particularly dangerous cross sea is raised, in which no boat could live, and which is even considered dangerous to small craft. On the flood at such times there is no more sea than in other parts of the river.



**SAGUENAY RIVER** above Tadoussac and pointe Noire, is described in Chapter xv. In these pages the shores, banks and shoals about its confluence are described, and clearing marks given.

**PRINCE SHOAL** is the outermost obstruction in the approaches to the Saguenay river, and is situated on the south side of the main passage. It consists of several patches, with from 12 to 24 feet of water over them, the shoalest spot of 12 feet lying near the southern edge, with pointe Rouge beacon bearing N.W.  $\frac{1}{4}$  N., distant  $3\frac{7}{10}$  miles, and Birch point clay cliff bearing West, distant  $4\frac{9}{10}$  miles. The beacon in the west corner of Ste. Catherine bay in line with Lark islet lighthouse, bearing W.N.W., leads over the rock.

**LIGHT-VESSEL.**—The northeast extremity of the shoal is marked by a lightship moored in the alignment of pointe Noire range light, 4.4 miles S.E. by E.  $\frac{1}{4}$  E. from the front range light, painted *red*, with the letters Prince Shoal No. 7, in white on each side. This vessel has two masts and carries a red ball at the maintopmast head. She exhibits three lights, as follows:—One *white* at an elevation of 31 feet at the mainmast head, one *white* at an elevation of 25 feet at the foremast head, and one *red* on a stay between the masts at an elevation of 49 feet above the water. These lights should be visible for a distance of 9 miles. Should the vessel not be in her position the ball or mainmast light will be lowered. The lightship is usually removed every autumn about the 28th November.

**Fog alarm.**—In thick weather a whistle, operated by steam, sounds one blast of 5 *seconds* duration every *minute*.

**BAR REEF**, with a general depth of 11 to 18 feet, and about one mile long in an east and west direction, is situated westward of Prince shoal, from which it is separated by a channel half a mile wide, with depths of from 6 to 8 fathoms. A shoal of 4 feet lies on the southern part of Bar reef with Lark islet disused lighthouse bearing W. by N.  $\frac{3}{4}$  N., distant  $1\frac{3}{10}$  miles. The R.C. church spire at Tadoussac in line with the high water line of pointe Rouge, bearing N.N.W.  $\frac{3}{4}$  W. leads over the



shoalest part of the reef. The easternmost 3-fathom knoll of the reef lies E. by S.  $\frac{3}{4}$  S., distant  $1\frac{9}{10}$  miles from Lark islet lighthouse.

**Bell-buoy.**—A black bell-buoy, No. 95B, is moored in a depth of 5 fathoms on the northern side of Bar reef.

**Leading marks.**—To pass between Prince shoal and Bar reef, bring the west tower on Tadoussac hotel in line with pointe Rouge beacon, bearing N.W.  $\frac{1}{2}$  N.—(See leading line D on Can. plan No. 203.)

Small craft may pass southwest of Bar reef in 11 feet least water by bringing the triangular beacon on the hill behind the Roman Catholic church in line with the beacon on pointe Rouge, bearing N.N.W.  $\frac{1}{4}$  W.—(See leading line E on Can. plan 203.)

**LARK ISLET, SHOALS OFF.**—Lark islet, (île aux Morts) is small, about 7 feet high, and has on it a disused lighthouse. It lies at the northeast point of the extensive flat known as Lark reef. It is situated E. by N.,  $1\frac{1}{10}$  miles from pte. aux Alouettes, and from it shoal water and uneven ground extends a considerable distance northeastward. The outermost head has 18 feet over it and lies N.E.  $\frac{1}{4}$  E. distant 7 cables from the islet. The water then deepens suddenly to depths of 20 fathoms and over.

**Leading marks.**—Pointe Noire leading lights in line, bearing N.W. by W.  $\frac{1}{2}$  W., lead close northward of this shoal, and of Bar reef and Prince shoal, and half a mile southward of Vaches shoal. The back light should be kept slightly open to northward of the front light to give more clearance. (See leading line "C" on Can. plan No. 203.) The leading line, Tadoussac triangular beacon over pointe Rouge beacon bearing N.N.W.  $\frac{1}{4}$  W., also clears the northeast point of Lark reef. (See leading line "E" on Can. plan No. 203.)

**Anchorage.**—In westerly winds good shelter for small vessels will be found in 4 to 10 fathoms, between Lark and Bar reefs, with the church in Ste. Catherine bay in line with Lark islet lighthouse, bearing W. by N.  $\frac{1}{2}$  N. Anchorage for larger vessels in from 10 to 20 fathoms can be found off the sawmills, Ste. Catherine bay, and in 7 to 20 fathoms in the bay off Tadoussac hotel as previously directed.



**GENERAL DIRECTIONS.**—A vessel approaching the Saguenay from the northeastward may conveniently enter the river on any one of the three leading lines:—

First: Pointe Noire back leading light open a little northward of the front leading light, the alignment of the lights bears N.W. by W.  $\frac{1}{2}$  W.

Second: Pointe aux Alouettes well open southward of Lark islet disused lighthouse, bearing W.  $\frac{3}{4}$  S., passing in 4 fathoms close southward of Vaches shoal patches.

Or third: Birch point open a little southward of Lark islet disused lighthouse, bearing W.S.W., passing between Vaches shoal and Vaches reef.

On the two latter lines course must be altered for the mouth of the river as soon as Tadoussac hotel comes in sight bearing N.W.  $\frac{3}{4}$  N., but the ebb stream sets strongly across Vaches reef and must be guarded against.

**Caution.**—The leading mark (Boule point in one with pointe Ilot) shown on older charts for entering the Saguenay river, should not be used as it leads too close to Vaches reef. In addition, when passing this shoal, Tadoussac hotel should not be hidden behind pointe Rouge.

Deep-draught vessels approaching from the southwestward should pass well to the eastward of Prince shoal light-vessel and should not alter course to enter the river until the pointe Noire range lights are in line.—(See leading line C on Can. plan No. 203.)

In day-time the best track for a vessel of moderate draught, is to pass between Bar reef and Prince shoal on the clearing mark, west tower of Tadoussac hotel over the beacon on pointe Rouge, N.W.  $\frac{1}{2}$  N. On this line not less than 4 fathoms will be found.

**Pointe Noire**, the southern point of the mouth of the Saguenay river, is precipitous and steep to. There is a conspicuous white granite patch on the cliffs  $1\frac{1}{2}$  cables southwestward of pointe Noire.

**LEADING LIGHTS.**—A square tower with sloping sides, 27 feet high, painted white with a vertical red stripe is placed near



the eastern extreme of pointe Noire and exhibits, at 63 feet above high water, a *fixed white* light, that should be seen from a distance of 13 miles in clear weather. Another tower painted in a similar manner is situated N.W. by W.  $\frac{1}{2}$  W., 519 yards from the preceding lighthouse, and exhibits, at 129 feet above high water, a *fixed white* light, that should be seen from a distance of 15 miles in clear weather. These lights in line, lead into Saguenay river between Vaches patch on the northeast, and Prince and Bar reefs on the southwest.

**CAUTION.**—The alignment of these lights leads close to the 3-fathom shoal off Lark islet. Deep-draught vessels should keep the back light open to northward of the front light to give more clearance until past this spit.

**Fog horn.**—A hand fog horn established on pointe Noire, is used to answer signals from steamers heard to be in the vicinity of the point.

**Ste. Catherine bay** is situated between pointe Noire and Lark islet. A white beacon, which is only used for placing buoys, stands in the western corner of the bay, along the main road close to the edge of the sand cliffs. At half a mile southward of pointe Noire is a wharf which dries at its outer end at low water; there are also cottages, a store, and telegraph and post office. A church, with a conspicuous spire, stands on top of the cliffs near the western corner of the bay. A small disused church is situated nearly half a mile southeast of this.

Between pointe Noire and the wharf the shore is rocky and steep-to, there being very deep water within a few yards of the rocks, but just westward of the wharf the drying flats commence and fill the head of Ste. Catherine bay, joining up with Lark reef. These flats are sandy in the western portion of the bay, but fringed towards Lark islet by rocky ledges and large boulders.

At a distance of one mile southwest of pointe Noire, is the mouth of a small stream which drains the tableland. From here the highwater line becomes sandy, and trends at right angles to its previous direction, about S.E. by S., to Lark point, a distance of  $1\frac{1}{16}$  miles. It is backed for this distance by sand and wooded cliffs.



**Anchorage.**—Good anchorage is afforded close to the wharf in about 20 fathoms of water, out of the strength of tidal streams, but exposed to easterly winds which cause a considerable swell to set into the bay. Large steamers which anchor here in the summer months to load lumber for Europe seldom have to leave the anchorage.

**Pte. aux Alouettes** is a clear-cut sand cliff, about 70 feet high. There is a ridge of dark trees close northwestward of the point.

**LARK REEF**, a large extent of drying ground, is composed of sand and boulders, and at low water springs is entirely dry. It extends from the southwest side of Ste. Catherine bay to Lark islet, and from thence trends southward. The south-eastern extreme of the reef lies  $2\frac{3}{4}$  miles southeast of Birch point. From this position it trends in a westerly direction to the small bay just northward of cape Basque. Along the eastern edge of the reef are stony ridges, which are the last to cover on the rising tide. The highest of these ridges, lying about S. by W.  $\frac{1}{4}$  W., 4 cables from Lark islet, is a small bank which only covers at the very highest tides. Foul ground extends to a considerable distance to the eastward of the reef, the outside  $2\frac{1}{2}$  fathom patch being in a position with pointe Noire low light and Lark islet in line, bearing N.W. by N., distant from the latter  $2\frac{3}{4}$  miles.

**Light-buoy.**—A red cylindrical light-buoy, No. 96B, showing an *occulting red* light, is moored in 5 fathoms of water, three quarters of a mile off the southeastern extreme of the drying reef, in a position with Lark islet lighthouse bearing about N.  $\frac{1}{2}$  W., distant about  $3\frac{3}{10}$  miles.

**Leading marks.**—White island bearing S.W.  $\frac{3}{4}$  S., with the wooded Brandypot island seen well open southeastward of it, leads about one quarter of a mile southeastward of Prince shoal and nearly half a mile eastward of the shoal water off Lark reef. This line leads over the southeastern edge of the rocky patches which lie eastward of Vaches patch, but there is no danger on these patches.—(See leading line A on Can. charts Nos. 204 and 211.)



**The shore**, from Lark point, trends S.W. by W.,  $1\frac{3}{4}$  miles to Birch point, then W.N.W. for 6 cables to the mouth of rivière aux Canards. Along this distance are sand and clay cliffs, about 100 feet high.

**Rivière aux Canards**, is a small stream, the entrance to which is at the termination of the clay cliffs. There is a considerable amount of water in the stream as far as the bridge, but it disperses on the flats of Lark reef.

From rivière aux Canards the shore becomes rocky, and again takes up the general trend of the coast, south-southwestward.

**Île Echafaud du Basque**, which lies S.S.W.  $\frac{3}{4}$  W., distant 3 miles from the entrance to rivière aux Canards, is wooded, with the top of the trees about 103 feet above high water. The islet is at the mouth of a small cove which is entirely filled by the drying flats of the northwestern portion of Lark reef.

About 2 cables westnorthwest of île Echafaud is a small bare islet, 22 feet high. Towards the head of the cove is a small stream, at the entrance of which there is a lumber camp. Small coasting craft lie on the mud at the head of the cove to load rough lumber. A waterfall, among the hills just westward of the cove, is very conspicuous after rainy weather. The cove is entered along the southwestern shore, in order to avoid the large boulders lying north and south of île Echafaud. There are two rocks between the inner islet and the western shore, but these are easily avoided. The boulders are usually marked by trees placed by the logging crews of the lumber camp.

**Basque road.—Anchorage.**—Between Lark reef and cape Basque, there is good anchorage, sheltered by the reef from easterly winds, and by the mainland from northerly and westerly winds. There is room for many vessels, but the best berth is with the inner islet in the cove just seen to the northward of île Echafaud, the latter bearing about W. by N., distant one mile, and with Lark islet lighthouse bearing N.E.  $\frac{1}{4}$  E., with the sand cliffs at Moulin Baude northeastward of the Saguenay open westward of it. The depth here is 8 to 10 fathoms; holding ground, clay or stiff mud; distance from the 3-fathom contour



nearly half a mile. Small vessels can obtain excellent anchorage with the inner islet of the cove seen to the southward of île Echafaud, and with cape Basque and the next point southwestward of it in line, bearing S.W.  $\frac{1}{4}$  S. This is just outside the 5-fathom contour, and the holding ground is stiff mud. There is no anchorage off the north shore southwestward of this to Murray bay, a distance of 28 miles.

**Cape Basque.**  $6\frac{1}{4}$  miles southwest of Lark point, is a mountainous headland, steep-to, with a depth of 18 to 20 fathoms close to it.

*(For continuation North shore see page 145.)*

Variation  $22^{\circ}$  W.



## CHAPTER XIII.

### DIRECTIONS FROM FATHER POINT TO RED ISLET

(Continued from page 79.)

**GENERAL DIRECTIONS.**—From the pilotage ground buoy off Father point the course W.  $\frac{1}{2}$  N. for 18 miles leads to a position  $1\frac{1}{2}$  miles north of Bicquette lighthouse. Thence the course W. by S.  $\frac{3}{4}$  S. can be made for  $34\frac{1}{2}$  miles, passing one mile north of Northwest reef, 4 miles north of northeast Razade islet and  $1\frac{3}{4}$  miles south of Red islet light-vessel to  $1\frac{3}{4}$  miles south of Red islet lighthouse. A further distance of  $5\frac{1}{2}$  miles on the same course leads alongside White island light-vessel. When between Red islet and Green island course can be altered for the north or south channels as desired. Although the full force of the permanent east-going stream is felt on the above courses they are, approximately, those followed by pilots when between Father point and Red islet.

On the flood tide the currents are very variable between Red islet and Green island, there being but little west-going stream.

**Clearing line.**—White island bearing S.W. by W., and seen open north of Hare island at least twice its own breadth, clears the southeastern side of Red islet bank. (See leading line E on Can. chart No. 204, or leading line D on Can. chart No. 211.)

**Leading line.**—When using the southern channel the summit of Hare island, bearing about S.W. by W.  $\frac{1}{2}$  W., and seen midway between the highest Brandypots island and White island, leads, in nearly mid-channel, between Green island and Red islet bank. (See leading line F on Can. chart No. 204, or leading line C on Can. chart No. 211.)

Smaller vessels with local knowledge use the channel between Bic island and the mainland, passing Alcide rock and keeping between the 5 and 10-fathom contour off the south shore as far as Razade islets, when course is altered to clear the shoal water off Basque island and off the northeast end of Green island, and thence by south channel. On these courses not only is the easterly current avoided but the benefit of the flood

Variation  $24^{\circ}$  W. to  $22^{\circ}$   $15'$  W.



stream, although but a weak one, is obtained. It is maintained by local seamen that if two vessels of equal power are off Father point at the beginning of the ebb, a pilot with local knowledge of the set of the tidal stream taking the south shore will place his vessel in Quebec an hour before the ship taking the usual pilot courses.

**Directions for south shore course.**—A vessel being off Father point and wishing to take Bic channel, Father point light should not be brought to bear anything north of east until the west end of Barnaby island bears south, in order to avoid the shoal water off the island. Course can then be laid to pass in mid-channel between Bic island and the mainland. Approaching the vicinity of Alcide rock care must be taken to keep one of the two pairs of placing beacons open. (See page 67.)

Southeast reef in line with the south side of Bic island leads about one mile north of the rock. Mount Camille open north of cape Orignal also leads north of it, but this line can only be seen in very clear weather. Having passed Alcide rock, keep Basque island open its own breadth north of northeast Razade islet in order to make a course a little outside the shoal ridge off the south shore. When off northeast Razade alter course to pass at least a mile north of Basque island and  $1\frac{1}{4}$  miles north of Green island lighthouse. (See page 73 and clearing line G on Can. chart No. 204.)

Having cleared Green island reef, course can be set for the channel south of Hare island.

**Directions for north shore course.**—Many vessels use the channel between Red islet and the shoals off the Saguenay river, especially those which, being exempt from pilotage and so not obliged to call at Father point, are already in mid-stream. When going up with the flood considerable gain is made on this course, as the up-going stream, scarcely felt south of Red islet, is very strong on the north side of the bank.

From the position  $1\frac{1}{2}$  miles north of Bicquette light a course a little south of west should be steered in order to clear the strength of the easterly stream as soon as possible, and when



about  $2\frac{1}{2}$  miles south of cape Bon Désir course laid about S.W. by W. to pass one mile south of Prince shoal light-vessel. In clear weather the northern edge of White island bearing S.W.  $\frac{1}{4}$  S. in one with the eastern summit (about 200 feet) of Hare island (leading line B on Can. chart No. 204), should be brought on as soon as possible, and held until Red islet lighthouse bears about East; course can then be made for mid-channel between Hare island and the north shore. Prince shoal light-vessel and Lark reef buoy are good guides in this vicinity when the distant marks cannot be seen, and a vessel should keep on the northern side of mid-channel. (See also leading and clearing marks on Can. charts Nos. 203 and 211.)

Coming from the eastward, the sooner a vessel approaches the north shore the sooner she will clear the east-going current, and pick up the regular streams of flood and ebb.

**Caution.**—Both tides, but especially the ebb, set strongly on to Red islet bank, and must be guarded against, and when between the bank and the shoals off the Saguenay the eastern summit of Hare island should never be seen southeastward of White island.

(For continuation of “*Directions*” to northeastern entrance of St. Roch traverse, see page 165.)

Variation  $22^{\circ} 20'$  W. to  $21^{\circ} 30'$  W.



## CHAPTER XIV.

### CURRENT AND TIDAL STREAMS BETWEEN FATHER POINT AND RED ISLET

**TIDAL STREAMS.**—The flood stream coming up the north side of the St. Lawrence sets fairly along the shore as far as the Bergeronnes coves, when the main body divides. The northern portion of this stream then sets into the Saguenay, and, between the Red islet bank and the shoals off that river, into North channel.

The southern part of the stream curves over the tail of the Red islet bank, and the greater portion of it runs back to the eastward, making a permanent east-going current at all stages of the tides. This current runs at the rate of 2 to 3 knots at springs, according to whether it is flood or ebb in the main tidal stream.

Another portion of the southern branch runs southwestward along the edge of the Red islet bank, and passes into the North channel between Red islet and Hare island north reef.

Between Portneuf and Bergeronnes the flood, inshore, is of greater duration than the ebb. The west-going portion of the stream, however, extends but a very short distance from the shore, and from 4 to 6 miles off a weak flood and strong ebb is felt. Outside this the westerly stream is entirely overcome by the eddy flood which has joined up with the permanent easterly current.

At the commencement of the flood the stream sets strongly round Mille Vaches point into the bay, but as the flats cover, it takes up a direction parallel with the coast. In the late summer and autumn months when west and northwest winds are prevalent, local sailing craft bound up make the north shore as soon as possible, and tack on and off in the narrow belt of westerly current.

**On the south shore,** south of the east-going current, a weak flood sets west but is only felt a short distance from the land. This flood stream divides a little west of Barnaby island, going through the Bic and Biette channels. West of Bic island the stream slackens at about half tide and the northern portion



turns north and northwest, forming an eddy flood that joins up with the permanent easterly current. The eastern edge of this eddy is frequently marked by a curved line running from the vicinity of Alcide rock towards Northwest reef. The southern portion of this flood is very weak and runs close along shore and close outside the outlying islands. Between Razade islets and Basque island, and in Green island roads, the commencement of the flood sets decidedly south-southwest, setting between the islands and the mainland. The outer part of the stream passes close outside Basque and Apple islands and over Green island reef, and joins up between Green island and Red islet bank, with that part of the flood which comes across from the north shore, causing strong ripples at the points of junction. The main body of this flood stream divides again later, one part setting west and west-northwest across the tail of Hare island north reef, another running along Green island shore south-southwestward across the reef off the southwest end of Green island, and southwestward straight up the south channel.

The currents in mid-channel, between Green island and Red islet bank, are very variable on the flood, there being little or no west-going stream.

**The southern portion of the ebb stream** coming down South channel runs along the shore into the anchorage off the southwest end of Green island. It then sets strongly northeast across the reef extending from the southwest end of the island and joins up with the main body of the ebb, which is further augmented by a portion of the stream from North channel. Running between Red islet bank and Green island part of this main stream sets hard east-southeast across Green island reef and must be guarded against. Having passed Green island reef, the stream takes up a general direction parallel to the coast, until it feels the effect of the great volume of water setting out from the Saguenay, when it is deflected towards Basque island and the Razade islets.

Three or four miles west of Bic island and in the vicinity of cape Orignal the ebb at the commencement sets off shore, northward past the west end of Bic island and Bicquette island, and northeastward past Southeast reef. Between this reef and Bic island the current sets very strongly for about one hour



after the beginning of the ebb. When the ebb is well established it runs fairly between the islands and the shore and parallel with the latter. The rate of the ebb along the south shore is from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  knots at springs, but the rate is much reduced by easterly winds.

**From North channel** the ebb stream having been diverted by Lark reef and the adjacent shoals, sets southeast towards Red islet. A portion of the stream then goes north of the bank but the main body makes between Red islet and Green island, joining up, as before stated, with that from South channel.

The southwest end of Red islet divides the ebb stream, which sets strongly along both sides of the bank at the rate of as much as 7 knots at springs. This set is especially dangerous in view of the shoal water that extends southwestward from Red islet.

As might be expected, the great volume of water which runs southeastward out of the Saguenay on the ebb tide, influences the direction of the ebb stream to the southward, across the tail of the Red islet bank and towards Basque island. The dark-coloured waters of the Saguenay are very distinct from the greener waters of the St. Lawrence.

It has frequently been found that driftwood off the entrance of the Saguenay at the beginning of a spring ebb will drift right across the St. Lawrence river to between Apple and Basque islands on the one tide, the beginning of the following flood then taking it inside Apple island and towards the channel between Green island and mainland.

When the ebb tide from the Saguenay strikes the shoals between Vaches patch and Bar reef, and again when it meets the main body of the ebb from the north channel, and they together strike the shoal water of Red islet bank, tremendous tide rips are set up, especially with easterly winds, which are dangerous to small vessels.

The current from the Saguenay expanding on reaching the St. Lawrence, a portion of it sets northeast across the Vaches reef and along the northern shore. Vessels should exercise particular caution when near the Vaches reef on account of this strong set. The arrows shown on the chart will give, better than any description can, an idea of what may be generally expected.



## CHAPTER XV

### SAGUENAY RIVER

#### TADOUSSAC TO CHICOUTIMI

**Saguenay river**, entering the St. Lawrence between pointe Vaches and Lark point, is a very remarkable river resembling a long and narrow mountain lake for the first 50 miles above its confluence with the St. Lawrence. In this distance the Saguenay is from 6 cables to 2 miles wide, flowing through a deep valley lying transversely to the St. Lawrence, and formed by mountains of sienitic granite and gneiss. These mountains rise everywhere more or less abruptly from the water and form in places precipitous headlands over 1,000 feet in height. The promontories, seen one beyond the other up the magnificent reaches many miles in length, are wild and barren, but nevertheless, from a scenic point of view are full of grandeur and beauty.

The granitic hills are generally quite bare, but the valleys, through which rapid tributary streams descend, are filled with a deep deposit of sand and clay and are thickly wooded. There are quite extensive tracts of good land at Ha! Ha! bay, Chicoutimi, and around lake St. John. This country just mentioned is gradually becoming settled. In 1829 the only permanent inhabitants were the residents at the Hudson Bay Company's trading posts at Tadoussac and Chicoutimi.

In this first distance of 50 miles the water of the Saguenay is almost as deep as the mountains are high. Between the shoals at the entrance of the river, there is a bar on which there are 8 or 10 fathoms of water and within the bar the depth increases to 20 or 80 fathoms. Above pointe Noire, for a distance of many miles the depth reaches from 100 to 147 fathoms in the middle of the channel and there are 100 fathoms on either side, often within as many feet from the precipitous shore.

The bed of the Saguenay for many miles is 100 fathoms below that of the St. Lawrence at their confluence; so that if the waters were to fall sufficiently to lay dry the bed of the latter river, there would still be a depth of more than 100 fathoms in the Saguenay. It is these remarkable features of great depth, moun-



tainous shoreline and impetuous stream that has made the Saguenay river so celebrated.

Although the water is very deep there are occasional anchorages some miles apart. In the case of a vessel becalmed there is little or no danger, as there are no shoals in the channel within the entrance, and a boat ahead serves to keep her clear of the shore, while in a few places it might be possible for a line to be made fast to the rocks.

The Saguenay is navigable for large ships nearly to cap des Roches, 57 miles from the St. Lawrence; and small vessels (sailing craft require the assistance of the flood stream) can ascend to Chicoutimi, 8 miles farther. Just above cap des Roches the river suddenly shoals, and there is only 11 feet of water in its narrow and intricate channels, which lie between shoals composed of large boulders. Above this shallowest part, where at low water there is a complete rapid, the depth between shoals of large stones varies from 2 to 8 fathoms, and the river contracts to little more than a quarter of a mile in width, retaining that breadth nearly to Terres Rompues rapid at 6 miles above Chicoutimi.

The Saguenay discharges the water of lake St. John, contributing to the St. Lawrence a quantity of water only inferior to that which is supplied by the Ottawa river.

**Pilots.**—The pilotage service on the Saguenay is now under the Marine and Fisheries of Canada. (*See page xlviii.*)

**Communication.**—There is daily communication by steamer from Quebec during the summer, the vessels calling at Tadoussac, Ha! Ha! bay, St. Jean bay and Chicoutimi, and again touching at these ports on the return trip. The Canadian National Railways have one of their terminals at Chicoutimi, and one or two trains are run daily to and from Quebec. The Roberval-Saguenay Railway runs two trains daily between Chicoutimi, and Port Alfred and Bagotville, at the head of Ha! Ha! bay.

**Tides and tidal streams.**—It is high water, full and change, at Tadoussac, at the entrance of the Saguenay, at 2h. 55m. Springs rise  $16\frac{1}{2}$  feet; neaps, 12 feet.

(For approximate height at every hour after low and high water ordinary springs *see page 107.*)



The following remarks on the currents in the Saguenay were made in a report to the Canadian government in 1875:—

From St. Jean bay to cap des Roches, situated 36 miles to the northwestward, the surface stream is not strong at any time; in many parts there is a variable under- current, especially during springs, strong with the flood, but scarcely perceptible during the ebb. This under-current acting on sailing vessels drawing from 19 to 25 feet, sometimes renders them unmanageable, even when assisted by a steam tug.

From cap des Roches to the entrance of Chicoutimi river the stream is steady and even, in some parts setting on to the shoals, but without any under-current.

At springs a large body of water passes over Chicoutimi shoals (at a very rapid rate during the ebb), and falling suddenly into deep water seems to strike downwards at once leaving but a slight stream on the surface.

The flood stream in the Saguenay is very weak, and above Ste. Marguerite river it is almost imperceptible, excepting a weak stream close to the shores. The water, however, has been observed to flow up at the depth of several fathoms, while it was stationary or descending on the surface. The tide flows to Terre Rompues rapid.

The rate of the ebb stream varies from 3 to 5 knots, according to the breadth of the river; it is strongest in the mouth of the river, where it sometimes runs at the rate of 7 knots, and sets strongly over Lark islet and pointe Vaches reefs.

**The entrance to the Saguenay**, between Prince shoal, Bar reef, and Lark islet reef on the southwest, and Vaches shoal and reef on the northeast, is three quarters of a mile wide, with deep water and very irregular soundings. The shallowest part is on the bar between Bar reef and Vaches patch, where there is a least depth of 7 fathoms. Immediately within the bar the depth increases and off pointe Rouge it exceeds 80 fathoms. The river is three quarters of a mile wide from pointe Ilot, (the north-western point of Tadoussac harbour, which has a beacon on the western slope), across to pointe Noire, which has a curious white mark on its southern side.



**La Boule point** is a high and round-back hill, forming a steep headland, 4 miles above Tadoussac. It is the extreme point seen on the northeastern side of the river.

**LIGHT.**—On the southwest bank of the river, on a small point one mile below Passe Pierre islets and  $2\frac{2}{10}$  miles above pointe la Boule, is exhibited from a red, square, steel, skeleton tower, at a height of 40 feet above high water, an *occulting white* light, which should be visible from all points of approach seaward 11 miles, and as far as point Crêpe up the river. The light is unwatched.

**Grosse Roche**, called Sacré Cœur, is situated on the north bank of the Saguenay at about 5 miles above pointe la Boule. It is an important settlement, and contains one church, post office, telegraph office, several stores, and two cheese factories. Farming and the lumber trade are the principal industries. It has a population of about 900 inhabitants.

**Government wharf.**—A wharf at Grosse Roche has a length of 257 feet and a depth of water at its outer end of 16 feet at low water springs. It is provided with a slip.

**LIGHT**, (*Lat. 48°-14'-02" N., Long. 69°-53'-24" W.*).—One mile above Grosse Roche, is shown, from a lantern rising from the red roof of a white, square, wooden dwelling, at a height of 36 feet above high water, an *occulting white* light, which should be seen from a distance of 6 miles in clear weather. The light is unwatched.

## ANCHORAGES IN THE SAGUENAY

**Barque cove**, rather more than a mile above Tadoussac, and on the same side of the river, is 2 cables deep, and one or two small vessels could moor in it.

**St. Etienne bay and river** are  $10\frac{1}{2}$  miles up the Saguenay, and on its southwestern shore. The bay is one mile wide, and forms a harbour where several vessels may ride in 10 to 30 fathoms of water, clay bottom, along the edge of the bank which dries out one third of a mile from shore.



**Rivière Ste. Marguerite** flows into the Saguenay on the north side, about  $14\frac{1}{2}$  miles from its mouth. A considerable settlement is located here, the inhabitants being chiefly engaged in the lumber business. A number of ships call here during the season to load.

**Ile St. Louis** is 16 miles up the river, and there is excellent anchorage, either under its eastern end, or between it and the southern shore, in 10 to 30 fathoms of water, sand and mud bottom.

**LIGHT.**—On the north side of ile St. Louis, 124 feet above high water and 150 feet back from the water's edge, is exhibited from a lantern surmounting a red, square, steel skeleton tower, an *occulting white* light, visible 6 miles from all points of approach. The light is unwatched.

**Ile St. Barthélemi**, one mile higher up and on the northern side of the river, lies close to the mouth of river Cacard. One or two vessels might anchor northwestward of the isle, in 6 to 20 fathoms water; the place is small.

**Petit Saguenay (Dumas)**, on the southern shore is the name of a village situated on the east shore of the mouth of the Little Saguenay river. Its population is about 600 and the principal industries are farming and the lumber trade.

**Government wharf.**—A small wharf here dries at low tide. It is in a rather delapidated condition at present, but is considerably used by schooners.

**Wharf.**—The local lumber interests controlling the lumber business in the locality, ship considerable quantities of pulp wood in ocean-going steamers from their pier and special loading places in the bay.

**St. Jean bay (Anse St. Jean)**, on the southern shore and 22 miles up the Saguenay, is  $1\frac{3}{4}$  miles wide and  $1\frac{1}{2}$  miles deep. There is a small islet off the northwestern point and a prominent waterfall on the western side of this bay. River St. Jean and several small streams enter at its head. There is good anchorage for several small vessels in 8 to 40 fathoms water, mud



bottom, off these streams, and along the edge of the bank which dries out a quarter of a mile from shore. A small village is situated on the southern shore. It has a church and a telegraph office. Vessels of the local steamship line call here.

**Government wharf.**—A wharf, 360 feet long, giving a depth of 15 feet at its outer end at low water, is located here. It is provided with two slips, one being movable.

**Light.**—A lantern on the roof of the freight shed at the outer end of the pier in St. Jean bay, exhibits, at 16 feet above high water, a *fixed red* light, that should be seen from a distance of 5 miles in clear weather.

**Eternité cove**, on the southwestern side of the river, and 6 miles above St. Jean bay, is half a mile wide, and  $1\frac{1}{4}$  miles deep, and a river of the same name flows into its head. Vessels lie securely and quite land-locked, in 8 to 30 fathoms, mud bottom, at the head of this cove.

**Cap Eternité** is the south entrance point, and cap Trinité the northern entrance point of Eternité cove.

**Cap Trinité**, when seen from up or down the river, resembles three steps. On the lowest of these, about 400 feet above high water, is an image of the Virgin, 32 feet high, and on the next above, about 700 feet above high water, is a cross. The cape rises to the height of 1,500 feet.

**La Niche**, a curious hole in the cliffs, is on the southwestern shore, about 2 miles northwestward of cap Trinité.

**St. Basile du Tableau** is a small settlement situated on the north shore about 4 miles above La Niche.

**LIGHT.**—On the north shore on a small point directly opposite La Niche, is exhibited from a lantern surmounting a red, square, steel, skelton tower, an *occulting white* light, 59 feet above high water. This light should be visible 13 miles from all points of approach by water. This light is unwatched.



**Descente des Femmes**, on the northern shore,  $11\frac{1}{2}$  miles above cap Trinité, is a cove  $3\frac{1}{2}$  cables long, with a depth of 20 fathoms at its entrance, decreasing to 5 fathoms near its head. Several vessels can securely moor in it.

Houses extend round the cove and also round the coves on either side of it. The only communication is by water.

**Government wharf**.—A wharf, at Descente des Femmes, has a length of 218 feet, giving a depth of water at its outer end of about 16 feet at low water. It is provided with slips. The wharf provides shelter for small craft.

**Cape East**, on the northern shore, about 5 miles above Descente des Femmes cove, faces cape West on the opposite side of the river.

**LIGHT**.—On the south extremity of cape East, is erected a white, octagonal concrete tower. This tower is surmounted by a lantern with a red roof, which exhibits at a height of 76 feet above high water an *occulting white light every  $3\frac{1}{2}$  seconds* thus; light  $\frac{1}{2}$  second; eclipse 3 seconds. The light is visible over an arc of  $206^{\circ}$  from N.W. by W.  $\frac{1}{2}$  W. through north and east, to S.E.  $\frac{3}{4}$  S. This light should be visible 14 miles in clear weather and is unwatched.

**The Saguenay** turns suddenly northward between cape East and cape West, but the westerly direction of the river is continued to Ha! Ha! bay, for 6 miles beyond cape West, or to a distance of 55 miles from the entrance of the river.

**Ha! Ha! bay** is 6 miles deep and  $1\frac{1}{4}$  to  $2\frac{3}{4}$  miles wide, the widest part being at its head, where four considerable streams fall into it. The best anchorage is in 7 to 30 fathoms, clay bottom, on either side of a small islet joined to the shore at low water in the south-western corner of the bay. There is room for a considerable number of vessels, but the anchorage is rather open to easterly winds. This bay is fairly well settled and is cultivated from Fort point, the southeastern entrance point of the bay, westward and northward, to the northern cove at the head.

**Grande Baie (St. Alexis)**, a village of considerable size, having a population of 2,450, is situated on the shores of La



Grande baie, the southwest arm of Ha! Ha! bay. A Roman Catholic church with a spire, and also a sawmill are located here. The principal industries are farming and lumbering. There is a branch of the Banque Canadienne-Nationale and telephone service in the village; only small supplies may be obtained.

**Government wharf.**—A wharf constructed here has a length of 1,620 feet, giving a depth of 22 feet at its outer end at low water.

**Wharf.—Port Alfred**, the contiguous town to Bagotville, separated only by the small rivière à Mars, is the centre of local industrial activity. It has a population of 1,213, nearly half of which is employed in the large local pulp industry. A privately owned wharf has been constructed here and dredging when completed will give a depth of 29 feet at low water on the north and northwest sides of the pier. Local aids to navigation, including range beacons and buoys are privately maintained.

**Bagotville (St. Alphonse)**, on the northwest arm of the bay and on the north side of the river above mentioned, has a population of 2,204. It is the terminus of the Roberval Saguenay railway (a railway operating from Chicoutimi) and is a regular port of call of local steamers during the season of navigation. St. Alphonse church is a conspicuous landmark here.

**Government wharf.**—A wharf located here has a length of 590 feet, a frontage of 160 feet and a depth of water at its outer end of 37 feet at low water. It is provided with a movable slip.

**Light.**—A lantern on the roof of the freightshed on the outer end of the pier at St. Alphonse (Bagotville), exhibits, at a height of 34 feet above high water, a *fixed red* light.

**Les Petits islets**, on the northeastern shore of the Saguenay,  $4\frac{1}{2}$  miles above cape East, are three small rocky islets, joined to the shore at low water. The bay eastward of them forms a small but secure anchorage, with a depth of from 6 to 17 fathoms, mud bottom.



**The Saguenay** at Petits islets is nearly two miles wide with a depth of 65 fathoms. Two miles to the westward, opposite a high rocky point projecting from the northeastern shore, the river is contracted to three quarters of a mile in width. In the next three miles, the distance from the rocky point to cap des Roches, it expands again to nearly two miles in breadth.

On the northeastern side of the river from the high rocky point, mentioned above, to within one mile of cap des Roches, there is good anchorage in depths up to 20 fathoms.

**St. Fulgence**, (l'anse au Foin), is a small village on the northeastern shore of the Saguenay, about  $8\frac{1}{2}$  miles below Chicoutimi. It contains a Roman Catholic church, 8 stores, a saw-mill, brick factory and telegraph office. The population of the district was 1,199 in 1921. There is a block or isolated pier, 47 feet long and 17 feet wide, sunk in 10 feet of water, 2,500 feet from high water line, originally built to give shelter to the small craft employed loading steamers in the bay. It is now in a dilapidated condition and nearly submerges at high tide.

**Government wharf.**—A wharf here, 552 feet long and provided with a slip, has a depth of  $1\frac{1}{2}$  feet at its outer end at low water. A narrow dredged channel, which nearly dries at low water, leads through the flats to the wharf. Plans provide for the deepening of the channel to 5 feet at low water.

**Cap des Roches** is 57 miles from the river's entrance, and here the natural deep water channel of the river ends. From here a channel as described below, has been dredged to Chicoutimi, 6 miles farther.

**Anchorage.—Buoys.**—A black and white chequered can buoy is moored in 5 fathoms, on the eastern edge of the flats below cap des Roches. A red conical buoy is moored E.S.E.  $2\frac{3}{4}$  cables from the chequered buoy. These buoys indicate the best anchorage for deep-draught vessels, waiting cargo from Chicoutimi.

When coming to the anchorage, after passing the high rocky point, keep a moderate distance off the northeastern shoal, and



anchor in 11 to 14 fathoms of water, with cape West about  $2^{\circ}$  open of the high rocky point. There is good anchorage for vessels of light draft inside the chequered buoy.

**Directions** are unnecessary for ascending the Saguenay from Tadoussac to the above mentioned anchorages, as there is neither rock nor shoal in the fairway.

**Channel buoys.**—A red conical buoy No. 2, moored S.E. by E.  $\frac{3}{4}$  E., distant 6 cables from the chequered buoy marks the north side of the channel, at the junction of the deep water below cap des Roches and the narrow and intricate channel from this point to Chicoutimi. Vessels bound for Chicoutimi should approach this buoy and steer for buoy No. 6 before taking the poste St. Martin range, so as to avoid a spit which makes out from the south shore on that line of range, a little eastward of the eastern limit of chart No. 209. If waiting for the tide, vessels anchor in the vicinity of the chequered buoy.

Including the above two buoys the channel to Chicoutimi is marked by 10 red and 9 black buoys.

**The Saguenay** is still  $1\frac{1}{4}$  miles wide to cap des Roches, but contracts rapidly above it, and assumes at the same time the usual character of the river, such as mud banks on either side, dry at low water, shoals of large boulder stones, drift trees, etc. The water also is fresh at low water. Work is being carried on continuously for improving the upper reaches of the Saguenay. At present, owing to gradual filling-up, only 11 feet at low water can be relied upon in the channel from the deep water opposite cap des Roches to Chicoutimi. The channel is 250 feet wide on the tangents and 350 to 500 feet wide on the curves.

**LIGHTS.**—The following seven sets of leading lights indicate the channel to Chicoutimi: Poste St. Martin, *fixed white*; river Valin, *fixed white*; river Caribou, *fixed white*; Simard, *fixed white*; rivière du Moulin, upper range, *fixed white*; Price Monument, *fixed red*; rivière du Moulin, lower range, *fixed white*. There is a *fixed red* light shown from a square, wooden lighthouse on top of the freight shed on Chicoutimi pier, visible for a distance of 5 miles.



**Tugs** can be secured from Chicoutimi.

**Chicoutimi town**, the largest town in the district of Chicoutimi is at the head of navigation. It contains a large cathedral with two spires, a massive hospital, convent, court house, post office, five banks, about 150 stores and several saw-mills. The population in 1921 was 8,937.

It is a comparatively large distributing centre, being the terminus of the Canadian National Railway, the Roberval-Saguenay Railway and the Canada Steamship Lines Limited. The principal industry of Chicoutimi is mechanical pulp, the local mills manufacturing 700 tons daily. A considerable export trade in cheese is also carried on.

**Government wharves.**—The main wharf has a frontage of 545 feet, a mean depth of 260 feet and a depth of water at its outer end of 13 feet at low water springs. It is provided with four slips, two being movable. Privately owned railway sidings and a log-hauling plant are built on the wharf. The approach to the wharf has been dredged to 16 feet at low water.

Another Government wharf, known as the Basin wharf, is situated at the western end of Racine street, the principal commercial street of the town. It has a frontage of 185 feet on the river Chicoutimi by a mean depth of 48 feet, and it nearly dries at low tide. The wharf is provided with two slips, one being movable. The local ferryboat leaves every 30 minutes for Ste. Anne de Chicoutimi on the opposite side of the river.

**Tides.**—It is high water at Chicoutimi about 3h. 33m., and low water about 3h. 31m. earlier than at Quebec. The tide here is so similar in character to that at Quebec that it is better referred there than to Father point. Springs rise  $18\frac{1}{4}$  feet; neaps  $11\frac{1}{2}$  feet.

**Ste. Anne** (Ste. Anne de Chicoutimi), a village of about 2,000 inhabitants, is situated opposite the town of Chicoutimi. It contains a church, post and telegraph offices, several stores, cheese factories, lime kiln, brickyard, pottery works and a sawmill. Both sides of the river in this locality are cultivated.



**Government wharf.**—A wharf here, 462 feet in length, has a depth of water of 6 feet at its outer end at low water springs. It is provided with three slips, one being movable. There is also a floating pontoon to facilitate the landing of passengers and freight.

**Chicoutimi river** empties into the Saguenay on its southwestern side, one mile above the town. It is the largest tributary of the Saguenay. The Chicoutimi falls 40 to 50 feet, through a narrow, rocky and rugged channel, a short distance within its entrance.

Several of the early missionaries were buried in a chapel that formerly stood on the left bank of the Chicoutimi river, but which is now the site of large sawmills. Their tombstones may still be seen.

**Rivière aux Vases** flows into the Saguenay at a point about  $5\frac{1}{2}$  miles above Chicoutimi. A small settlement is located at the mouth of the river.

**Government wharf.**—A wharf, situated on the northeast shore of the confluence has a length of 227 feet and a depth of water at its outer end of 6 feet at low water springs. It is provided with a slip. A small pontoon is moored at the outer end of the wharf to facilitate the landing of passengers and freight.

**The Saguenay**, from Terres Rompues rapid to lake St. John, a distance of some 30 miles, is said to be so full of heavy rapids, as to be dangerous to canoes; therefore the more circuitous route up the Chicoutimi through lake Kenogami, and down the Metabetschuan river is preferred. At the mouth of this last named river, on the south shore of lake St. John, stands a King's post, leased by the Hudson Bay Company. This post was first established by the Jesuit missionaries in the sixteenth century, and traces of their cultivation still remain.

Variation  $21^{\circ}$  W. to  $22^{\circ}$  W.



## CHAPTER XVI

### SOUTH SHORE

#### GREEN ISLAND TO POINTE AUX ORIGNAUX

*(Continued from page 76.)*

**Cacouna island**, the northeast point of which lies S.S.W.  $2\frac{1}{4}$  miles from the southwestern end of Green island, is about  $1\frac{1}{4}$  miles long in a direction E.N.E. and W.S.W. and about 3 cables wide. It is of grey rock, well wooded, and faced by cliffs along the northwest side. Cacouna island is about 280 feet high and very conspicuous, as it stands out clearly against the gradual rise of the mainland. The island is joined to the mainland by swampy grass lands, across which a causeway is laid. These grass lands are partially covered at highest tides, but the causeway seldom covers.

**Cacouna rock**, a small bare islet 25 feet high, lies on the edge of the drying line 3 cables northwestward of the northeast point of Cacouna island, to which it is joined by a reef of slate drying at low water.

**Cacouna village**, with a population of 618 in 1921 situated on the mainland southwest of the western end of Cacouna island, is a favourite summer resort, with telegraph office, post office and several churches, one of which (St. George R.C. Church) is a very conspicuous object from seaward. It has a station on the Canadian National Railway, which here runs about 3 miles back from the coast.

**Wharf**.—Extending from the little rocky point  $4\frac{1}{2}$  cables to the northwestward of Cacouna church, and lying in a south-westerly direction, is a well constructed wharf, alongside which there is a depth of about 12 feet at high water.

**Beacon**.—A triangular beacon, painted white, is situated N.N.W.  $\frac{1}{2}$  W.  $3\frac{1}{2}$  cables from the church. The church in line with this beacon gives a line for placing White island reef light-vessel.

Variation  $21^{\circ} 30'$  W.



**Roches Percées**, a long very narrow ridge of slate, is in two parts that together extend  $1\frac{2}{10}$  miles, parallel to, and distant nearly one mile from the shore. The eastern part is a small isolated rock  $1\frac{8}{10}$  miles to the southwestward of Cacouna island, and is one foot above high water. The western part is  $1\frac{1}{2}$  feet high in the middle, nearly one mile long, and narrow.

A narrow channel with least water of  $3\frac{1}{4}$  fathoms lies between the reef and the shore. Small craft using this channel should keep on the side of mid-channel nearest the rocks, as there are depths of 10 feet close alongside them, while on the shore side of the channel the water shoals to 7 feet close to the edge of the 3 fathom line.

**Rivière du Loup en Bas (Pointe Rivière du Loup)**, is a favourite summer watering place, situated on a point  $5\frac{1}{2}$  miles southwest of Cacouna island. The river from which it takes its name is of considerable size. There is a depth of 2 feet at its entrance at low water; but it almost dries across a short distance within the inner end of the pier. A depth of about 8 feet can be carried at high water to the mills near the bridge, a distance of  $1\frac{3}{10}$  miles.

An hotel, telegraph and post office, open from May to October, stand near the inner end of the pier. There is telephone communication between the telegraph office and Fraserville, and a long distance installation by which Quebec can be communicated with.

Good water can be obtained in any quantity from a stand pipe on the end of the wharf, on application to the Fraserville authorities.

**Government wharf.**—A wharf extends about 1,600 feet northwestward from the northern entrance point of the river, with a depth alongside its outer head of 13 feet at low water, and with 9 feet alongside the southwestern side of the head. Inside the T on the northeastern side it is dry at low water. The wharf is provided with two movable slips. Two large freight and passenger sheds are built on the outer end of the wharf. A railway, for the transportation of freights, connects the wharf with the Canadian National Railways system.



If for examination of her bottom, or any other reason a vessel has to be beached, a comfortable berth can be obtained alongside the pier, about half way along the southwest side on stiff mud, but as there are some rocks close to the elbow of the pier where it bends to the eastward, the end of the vessel should be at least 200 feet from the elbow.

**LIGHT** (*Lat. 47°-50'-41" N., Long. 69°-34'-18" W.*).—A square white lighthouse 35 feet high, on the shed at the end of the wharf at Rivière du Loup, exhibits at 36 feet above high water, a *fixed red* light, which should be seen from a distance of 7 miles in clear weather.

**Anchorage** off pointe Rivière du Loup is in depths of from 4 to 5 fathoms. It is sheltered from all but the northerly winds, and the holding ground is very good. There is a depth of 4 fathoms to within  $2\frac{1}{2}$  cables of the pier.

**Tides.**—It is high water, full and change, at Rivière du Loup pier, at 3h. 15m.; springs rise  $16\frac{1}{2}$  feet and neaps 12 feet; neap range, 7 feet. The ebb tide sweeps strongly around the bay, and along the southwest side of the wharf. With strong northerly winds this sets up a considerable sea alongside the head of the wharf, making it impossible for small craft to lie there under these conditions. These strong currents also make it extremely difficult to berth a vessel on the southwest side during the ebb tide.

**Marine signal and telegraph station.**—There is a signal and telegraph station near the inner end of the wharf. Signals from passing vessels are answered from a flagstaff on the point, and vessels can be reported to Quebec and elsewhere. (*See page xliv.*)

**Supplies** of all kinds can be obtained here. A small quantity of coal is kept in stock at Rivière du Loup, at Ste. Flavie and at St. Charles junction, but any quantity can be brought from the Pictou collieries in 50 hours, or from Springhill in 39 hours. This coal supply is transported by the Canadian National Railway to the end of the pier where it can be taken directly from the cars.



**RIVIERE DU LOUP (Fraserville)**, situated close inshore of the entrance to the river, and the chief town of the county of Temiscouata, had a population of 7,703 in 1921. It contains two conspicuous churches, one on the flat, and another on the summit of the ridge at the back of the town, the court house, a conspicuous square stone building about 250 yards westward of the church, a small Protestant church with a square tower, besides several manufactories, including pulp mills. There is a hospital here, where accidents and serious cases can be efficiently and skillfully treated.

The town is a divisional point of the Canadian National Railway, and the engineering works of the railway, where small machine repairs can be made, are grouped about its railway station. The Temiscouata railway runs from Rivière du Loup to Edmunston, where it connects with the Canadian Pacific system.

The land in the vicinity of Fraserville, is a series of ridges parallel to the shore, and separated by valleys which are under cultivation. From the valley, southward of the ridge that terminates in pointe Rivière du Loup, a remarkable isolated hill rises 250 feet in height. From the westward this hill appears as a sharp cone. The shore ridges, all of which are faced by cliffs on the river side, extend to Notre Dame du Portage. The cliff, about 2 miles west-southwestward of Fraserville, is surmounted by a flagstaff and a summer house, 186 feet above high water. Behind these ridges the main hills are almost flat in outline, and slope gradually seawards, from elevations of 400 to 550 feet.

**Notre Dame du Portage** is a small village 5 miles southwest of Rivière du Loup. It contains a small church not easily picked up from seaward.

**Government wharf.**—The wharf here has a length of 472 feet and dries at low tide. It is provided with stairs and mooring posts.

**Loup bank.**—The 3-fathom contour, which is within one cable of the end of Rivière du Loup pier, commences to extend its distance from the shore, until abreast of Notre Dame du Portage, it is nearly  $2\frac{3}{4}$  miles distant from the high line, becoming very shoal on the southwestern part towards the Pilgrim islands.

Variation  $21^{\circ} 30'$  W.



**Pilgrim shoal** is a narrow ridge of sand and gravel, about  $5\frac{1}{2}$  miles long and lying in an E.N.E. and W.S.W. direction. It is seldom more than 2 cables wide except in the middle where it is joined up by depths of 12 to 15 feet to Loup bank, of which it is practically a part.

The northeastern end of the shoal lies W.  $\frac{3}{4}$  S.,  $3\frac{8}{10}$  miles distant from Rivière du Loup lighthouse. The southwestern end of it lies N.N.E.  $\frac{1}{2}$  E.,  $1\frac{9}{10}$  miles distant from Pilgrim island lighthouse.

There are two heads of 11 feet on this bank, the easternmost lying N.N.W.  $\frac{1}{4}$  W., distant  $1\frac{6}{10}$  miles, and the western head lying N.W.  $\frac{1}{4}$  N., distant  $1\frac{1}{2}$  miles, from the east end of Great Pilgrim island. The general depth on the bank is 14 to 17 feet.

**Leading marks.**—The northwestern sides of Grande island and Burnt island in line, bearing S.W.  $\frac{1}{2}$  W., leads along the northwestern edge of the Pilgrim shoal. The southeast side of Green island well open northward of Cacouna rock and bearing N.E. by E.  $\frac{1}{2}$  E., leads in mid-channel between Loup and Middle banks.

**Shoal.**—A 5-fathom spot  $3\frac{8}{10}$  miles W.  $\frac{1}{4}$  N. of Rivière du Loup wharf light is 3 cables outside the well defined 5 fathom contour and close to the usual track of vessels.

**Light-and-bell buoy.**—A steel cylindrical light-and-bell buoy, No. 51B, is moored in 5 fathoms of water on the northwestern side of Pilgrim shoal, with the northeastern end of Great Pilgrim island bearing S.E.  $\frac{1}{2}$  E., distant  $1\frac{8}{10}$  miles, and it exhibits an *occulting white light*. The bell is sounded by the motion of the buoy on the waves.

**PILGRIM ISLANDS**, locally known as **The Pilgrims**, is a group about 4 miles long, of four islands and some rocks, lying about E.N.E. and W.S.W., distant  $1\frac{1}{2}$  to 2 miles from the shore of the mainland. The channel between these islands and the mainland is very shoal, with many large boulders in it which are only just covered at low water.

**Great Pilgrim island**, the eastern end of which is situated S.W. by W.  $\frac{1}{2}$  W.,  $7\frac{1}{2}$  miles from pointe Rivière du Loup, is the



highest of the group, and is about three quarters of a mile long, E. by N.  $\frac{1}{2}$  N. and W. by S.  $\frac{1}{2}$  S. It is of grey rock partly covered with turf, and with stunted trees in the hollows. The ends of the island rise to rounded hills, the eastern one being 218 feet and the western 223 feet above high water.

**Middle Pilgrim** is partially wooded, 181 feet high, and is joined on the southwest side by a drying reef to a smaller island about 120 feet high. On the southwest edge of this drying reef are two small bare islets, and the reef is fringed by slate ledges, with some detached drying rocks 2 cables to the southwestward.

There is a channel for small craft between the east end of Long Pilgrim island and the Middle Pilgrim group, with a deep hole in it, which is sometimes used as an anchorage by smaller vessels seeking shelter from westerly winds.

**Long Pilgrim**, the western island of the group, is narrow, and about 3 miles long, lying N.E.  $\frac{1}{2}$  E. and S.W.  $\frac{1}{2}$  W. Its eastern end, which is the highest, is partially wooded and about 128 feet high. There is a small bare islet 10 feet high off the southwest end. About two thirds of a mile from the southwest end there is a gap through which boats can pass at high water.

**LIGHT** (Lat.  $47^{\circ}-42'-56''$  N., Long.  $69^{\circ}-44'-50''$  W.).—A white circular brick tower with a red lantern, rising from the middle of a square building, the whole building being 39 feet high, is situated on the top of Long Pilgrim island at  $1\frac{3}{4}$  miles from its northeastern end and 108 yards within its northwestern coast. It exhibits, at 136 feet above high water, a *fixed white* light, which should be visible at a distance of 12 miles in clear weather.

**The shore.**—From Notre Dame du Portage, the shore trending S.W. by W.,  $3\frac{1}{4}$  miles, is low and fringed by a drying bank from one quarter to three quarters of a mile wide and composed of mud and scattered boulders. It then curves slightly to the W.N.W., to a point with a rocky summit 110 feet high. From this point the coast again resumes the general direction, trending S.W. by W. to Kamouraska bay.



**Andréville—(St. André village)** is situated on the shore abreast of the southwestern end of Long Pilgrim island,  $3\frac{4}{10}$  miles S.W. by W. from the above rocky point. It has an important factory for agricultural implements and a foundry. The church is a stone building with a spire, but owing to its dark colour is not very conspicuous from seaward. The population was about 596 in 1921.

Abreast of the southwest end of Long Pilgrim island, the drying line extends to a distance of  $1\frac{4}{10}$  miles from the shore, leaving only a boat passage about half a mile in width and 3 feet deep at low water spring tides, on the Long Pilgrim island side of the channel.

**Government wharf.**—At the village, a wharf 1,654 feet long, extends at right angles to the shore in a northwesterly direction with about 9 feet of water alongside at high water.

**Pointe St. André**, about a mile southwest of St. André village, is a round rocky island with a few stunted trees on it. It is about 4 cables long N.N.E. and S.S.W., and is joined to the shore, from which it is distant about 2 cables, by grassy flat lands that cover at the highest tides. A cross is erected on the summit of the island but it is difficult to see.

**The shore** between pointe St. André and Kamouraska is low, flat and fringed by grassy swamps. A series of remarkable hills, trending to the southwestward, rise abruptly out of the flat ground just back of the shore line. Abreast of the northeast end of the Kamouraska islands, and connected by grassy swamps to the mainland, are Dumais island, île de la Ferme, and Moreau island, three rocky elevations of about 100 feet and of the same formation as the back hills.

**ST. ANDRE BANK** extends between the Pilgrim islands and the Kamouraska islands, and dries out nearly to a line between the south end of Grande island and pointe St. André. It is very flat and gradually shelving to the 3-fathom line, when it drops sharply into deep water. There are several rocky ledges, drying from 4 to 7 feet, just off the edge of the flats E. by N. of Grande island.



**Leading mark.**—The southeastern sides of Grande and Burnt islands in line bearing S.W.  $\frac{3}{4}$  W., lead in deep water  $1\frac{1}{2}$  to 2 cables from the 3-fathom contour. Course should be altered to the northward as Grande island is approached.

**KAMOURASKA ISLANDS** are a group of three large and two small wooded islands, and several bare rocks which never cover, lying in a direction parallel to, and 2 miles off the shore, to which they are joined by a flat which completely dries at low water.

**Grande island**, the northeastern of this group, is situated S.W. by W.  $\frac{1}{2}$  W. 6 miles from the southwest end of Long Pilgrim island. It is 7 cables long and  $1\frac{1}{2}$  wide, partially wooded and 100 feet high.

**Beacons.**—Close inside the northeast point of the island are two white beacons which are used for placing red buoy No. 52B on the southwest end of Hare island bank. (See page 163.)

**LIGHT** (Lat.  $47^{\circ}-37'-19''$  N., Long.  $69^{\circ}-51'-45''$  W.).—A square white lighthouse, 39 feet high, with a dwelling attached, is situated at 240 yards from the northeastern end of Grande island, and exhibits, at 105 feet above high water, a *flashing white* light, showing *one flash every ten seconds*, visible at a distance of 16 miles in clear weather. The lantern and the roof of the dwellings are painted red.

**Anchorage.**—A comfortable anchorage for small vessels is just on the edge of the 3-fathom line,  $2\frac{1}{2}$  cables E. by N. of the northeast point of Grande island. This anchorage affords good shelter from any wind from southeast to west.

**Burnt island** is the southwestern of the two outer islands of the Kamouraska group. It is 92 feet high and wooded.

Between Grande island and Burnt island, there are three small bare islets, 5, 8 and 13 feet high, and off the southwest point of Burnt island, is a little group of bare islets 17 feet high.

**Burnt and Grande islands** are very steep-to on the northwest side. Situated on a line between the northeast point of Burnt island and the southwest end of Grande island, and about mid-distance, is a rock which dries 10 feet.



**Crow island**, the northeast end of which lies S.  $\frac{1}{2}$  W. three quarters of a mile from Burnt island, is a long narrow island with a summit, 107 feet high, towards the southwestern end, on which is erected a conspicuous cross.

This island is fringed by detached slate ridges, which off the southwest point extend to a distance of about 4 cables.

**Providence and Skate islands** are low wooded islands, on the drying flats, half a mile inside Burnt island and to the northeastward of Crow island.

**Kamouraska river** is a moderate sized stream, which rises on the slopes inland, and disperses itself over the mud flats off Kamouraska.

**Kamouraska**, a large village, situated on the shore southeast of Crow island, is a favourite summer resort. It has a church with a very conspicuous spire, which can be seen from a great distance. The population was 506 in 1921.

**Government wharves.**—There are two wharves near the church, about 300 feet from each other, with good landing for boats. The downstream wharf has a length of 504 feet and dries at low tide. It is provided with a slip. The upstream wharf is of irregular form and has a total length of 363 feet. It also dries at low tide and is little used.

A very conspicuous isolated hill 505 feet high, with a cross on the summit, lies S.E. by S.  $2\frac{9}{10}$  miles from Kamouraska church.

**Anchorage.**—There is good anchorage in 8 fathoms stiff mud off Kamouraska, with the prevailing winds up and down the river, but it is open to those from the northwestward. The best berth is with Kamouraska church just open southwestward of Crow island, bearing S.E.  $\frac{1}{4}$  E., and the southeast side of Grande island well open north of Burnt island, and bearing N.E. by E.  $\frac{3}{4}$  E.

**The shore** from Kamouraska trends about S.W.  $2\frac{1}{2}$  miles, then curves northwestward and northward to cap au Diable.

The drying line, which extends to a distance of nearly  $1\frac{1}{4}$  miles off the shore, is of stiff mud, sand and gravel, with out-



croppings of slate. Just outside the drying line there are many patches of rock having from 3 to 6 feet over them at low water.

The 3-fathom contour line off the shore abreast of Kamouraska is remarkably straight and well defined, running from the southwest point of Burnt island, to about 6 cables off the shore at pointe aux Orignaux.

**A rocky shoal**, with about 5 feet of water over it, lies close to the edge of the 3-fathom contour, on the line of Grande island lighthouse in one with the northwest edge of Burnt island, bearing N.E.  $\frac{3}{4}$  E., and at a distance of  $2\frac{1}{4}$  miles from the southwest end of the latter. This is the only danger within 4 cables of the edge of the 3-fathom contour, between the Kamouraska islands and pointe aux Orignaux.

**Islet à Julien** is a small bare islet 15 feet high one mile off shore, at one third of the distance from Kamouraska church to cap au Diable and on the line between them.

**Kamouraska bay**, southwestward of the town of Kamouraska, and just S.S.E. of cap au Diable, dries right out at low water. It is well sheltered and is much used for wintering in by small vessels, which lie aground on the mud.

In this bay half a mile E.S.E. of cap au Diable, are two small wooded islets, the trees of which are from 30 to 40 feet high; these islets are surrounded with slate ridges. The high line at the head of the bay is fringed by grassy swamps cut up by small streams draining the flats. Small vessels running in, towards high water, to beach on the mud flats must be careful to avoid the slate ledges off the southwestern point of Crow island, and those extending to the northeastward from cap au Diable. The cross on the summit of the isolated hill to the back of Kamouraska, in line with islet à Julien bearing S.E.  $\frac{3}{4}$  E., is a good line for coming in on, hauling to the southward into the bay.

**Cap au Diable** lies about S.W. by W.  $3\frac{1}{10}$  miles from Crow island. The extreme is low and sandy, but a round wooded hill about 220 feet high makes the cape conspicuous. Northwestward of the cape, inside the drying line, are several small



bare islets which never cover. Ridges of slate drying 6 to 8 feet extend to a distance of  $1\frac{1}{4}$  miles in a northeasterly direction from cap au Diable.

**Shoal.**—A small rocky head with 30 feet over it at low water and surrounded by depths of from 8 to 10 fathoms lies in a position with cap au Diable bearing S.S.E.  $\frac{1}{2}$  E.  $2\frac{1}{4}$  miles.

**St. Denis**, a small village, having a church with a conspicuous spire, lies in the low flat lands at the head of Kamouraska bay, to the southeast of the coast ridges between cap au Diable and pointe St. Denis. The spire, the summit of which is 280 feet above high water, can be seen from a great distance, showing over the shore ridges.

**Pointe St. Denis** lies W. by S.  $\frac{3}{4}$  S.  $2\frac{9}{10}$  miles from cap au Diable. It is the northeast extreme of a low wooded promontory, with rocky ledges extending off it northeastward. Just southeast of pointe St. Denis is St. Denis cove, a small bay which dries right out at low water. Between cap au Diable and pointe St. Denis, the high line is fringed by a drying reef of slate, covered with mud and sand, which extends from one-half to three-quarters of a mile from the shore. This drying line is bordered by numerous rocky patches with from 3 to 6 feet over them at low water.

**ORIGNAUX POINT (POINTE AUX ORIGNAUX)**, bearing W. by S.  $\frac{1}{2}$  S.,  $4\frac{3}{4}$  miles from cap au Diable, is low, extending from a wooded promontory which is joined to the mainland by a wide neck of low flat ground. A large hotel and some houses stand on the hillocks close eastward of the inner end of the pier.

**Government wharf.**—A wharf extends 1,200 feet from the point, with a crosshead alongside which there is a depth of  $14\frac{1}{2}$  feet at low water. The northwest corner of the pier has been extended to afford protection from drift ice to a vessel lying alongside the wharf. It is provided with two slips, one being movable.



**LIGHT** (*Lat. 47°-29'-11" N., Long. 70°-01'-41" W.*).—A rectangular, white building with a red roof, surmounted by an octagonal lantern, on the end of the pier, exhibits, at a height of 36 feet above high water, a *fixed white* light, which should be visible at a distance of 10 miles in clear weather from all points of approach by water.

**Anchorage.**—There is good anchorage at about a mile north-westward of the pier in 6 fathoms water, and closer in as convenient, there being a depth of 18 feet at 3 cables from the pier. Vessels loading timber from Rivière Ouelle generally anchor here.

**Tides and tidal stream.**—It is high water at pointe aux Orignaux, 1h. 35m., and low water 1h. 48m., after Father point. Springs rise  $18\frac{1}{2}$  feet, neaps rise  $13\frac{1}{2}$  feet.

The flood stream in the offing begins 2h. 18m. after low water at Father point, and runs 5h. 55m. The ebb stream begins 2h. 45m. after high water at Father point, and runs 6h. 30m.

(*For continuation South shore see page 175.*)

Variation  $21^{\circ} 15' W.$



CHAPTER XVII  
NORTH SHORE  
CAPE BASQUE TO GOOSE CAPE

*(Continued from page 114.)*

**North shore of the St. Lawrence.**—With the exception of the flat tableland about 200 feet high which extends from the foot of the hills to Alouettes and Birch points, the shore from cape Basque to Goose cape is bold and mountainous, with very deep water close up to the cliffs, few indentations and but one anchorage,—that off Murray bay. In many places the hills rise to a height of 1,200 and 1,300 feet within half a mile of the shore, with mountain ranges a short distance inland. Communication is effected the whole length of the coast from Ste. Catherine bay to Goose cape by good roads, and a daily mail service kept up even during winter months.

**Bay of Rocks**, the southern point of which is situated N.E. by N. distant  $2\frac{4}{10}$  miles from cape Dogs, is one mile deep and has about the same distance between its N.E. and S.W. entrance points. It is entirely filled, between its points, by a flat of sand, mud and large boulders, which dries 3 to 8 feet, except for a few pools and shallow drainings of the streams.

The northeast point of the bay is mountainous and steep-to. The southwest point is formed by a small wooded elevation 20 feet high, which is joined to the land by a narrow strip of yellow sand, and is fringed by a rocky ledge covered with large boulders.

Situated midway between the two entrance points, and extending from the edge of the drying flats to deep water, is a narrow ridge of rocks 2 cables long, which dries 9 feet. The outer point of this reef, which touches the line drawn from cape Dogs to cape Basque, is steep-to, there being a depth of 20 fathoms within a cable; but northeastward, to a distance of  $1\frac{1}{2}$  cables, there are several rocky heads with less than 6 feet of water over them. Both flood and ebb tides set strongly on to and across this outlying ridge. A large wooded island about 215 feet high is situated in the western corner of the bay.

Small coasting vessels, making for the wharf mentioned below usually pass northward of this island, as although there are fewer boulders in the southern channel, there are two reefs almost blocking it, which cover at high tide and are difficult to

Variation  $21^{\circ} 30'$  W.



see. As in most of the loading places close to lumber camps, the boulders on either side of the channel are marked by small trees before a vessel attempts to go over the flats.

There is no anchorage off the bay, except possibly on the edge of the flats, for small craft awaiting the tide. In this case anchorage should be picked up to leeward (as regards tidal streams) of the off-lying reef.

**Government wharf.**—In the southwest corner of the bay, close to a low but very conspicuous waterfall which marks the outlet of the river “*baie des Roches*,” is a wharf 142 feet long, alongside which small vessels lie on the mud when loading cordwood. This wharf is connected by a good road to the main coast road communicating with Murray and Ste. Catherine bays.

**The shore** to the northeast of bay of Rocks trends N.E.  $\frac{1}{2}$  N. for 2 miles and is steep-to. There are several small pebbly beaches in this distance and landing places for boats but no anchorage. Between bay of Rocks and cape Dogs the shore is mountainous with high cliffs, and three or four small indentations where temporary jetties are erected to enable coasting craft to load untrimmed lumber. In case of necessity small vessels could beach in these coves near high water.

**Cape Dogs**,  $5\frac{3}{4}$  miles S.W.  $\frac{3}{4}$  S. from cape Basque, is the first prominent point after that cape. It is very precipitous and steep-to, there being 60 fathoms within a ship's length of the rocks.

**LIGHT** (*Lat.*  $47^{\circ}-54'-34''$  N., *Long.*  $69^{\circ}-48'-17''$  W.).—A white, octagonal, reinforced concrete tower, 38 feet high, having a white, circular, metal lantern, exhibits, at a height of 207 feet above high water, a *group flashing white* light, showing *2 flashes every 5 seconds*, which should be visible from a distance of 21 miles in clear weather.

**Fog signal.**—During thick weather, a diaphone, operated by compressed air, gives one blast of *5 seconds* duration every *50 seconds*.

The building is situated about 100 yards southeast of the lighthouse, and the horn, which points southeast, is 31 feet above the water.

**Shettle port**, 2 miles W.S.W. of cape Dogs, at the entrance to a shallow stream, has a sawmill and a wharf at which small craft can lie for loading. The wharf dries at low water and

Variation  $21^{\circ}$   $30'$  W.



can be approached only towards high water. Temporary anchorage for small craft can be obtained off the mouth of the stream, in the southwest corner of the little bay, but the bank is shoal and very steep-to.

**Pointe aux Quilles** is the southwestern point of Shettle port. It is quite prominent and rises to an elevation of 773 feet within half mile from the shore.

**Rivière Noire**, a large village, containing stores, hotel and sawmill, lies at the mouth of rivière Noire,  $4\frac{1}{2}$  miles southwest of cape Dogs. The bank at the mouth of the river dries except in the bed of the stream.

**Wharf.**—There is a small wharf at the mouth of the river, alongside which vessels lie loading lumber. Except for a shallow stream, it is dry alongside the wharf at low water.

**St. Siméon**, half a mile southward of rivière Noire, is a small summer resort. In 1921 the resident population was 665. The principal industries are farming and pulpwood. It has no railway connection but is a place of call for the boats of the Canada Steamship Lines Limited. On the plateau above the wharf is St. Siméon church, which is very conspicuous, the summit of the spire being 460 feet above high water. There are a few houses grouped near the inner end of the pier, and a road connects with the main road between Murray bay and Ste. Catherine bay.

**Government wharf.**—A wharf, 525 feet long, extends from the sandy shore below St. Siméon village in a southeasterly direction and has 20 feet at low water alongside its outer end. It is provided with two slips, one being movable.

**LIGHT** (*Lat.*  $47^{\circ}-50'-23''$  N., *Long.*  $69^{\circ}-52'-21''$  W.).—A white lantern, with a red roof, on the freightshed at the end of the wharf, exhibits, at a height of 40 feet above high water, a *fixed white* light, visible 11 miles in clear weather. It is visible through an arc of the horizon of  $163^{\circ}$  from S.W.  $\frac{3}{4}$  W. through west and north, to N.E.  $\frac{3}{4}$  N.

**Foghorn.**—A hand foghorn is sounded in foggy weather, if vessels are heard in the vicinity.

Variation  $21^{\circ}$  W.



**Port au Persil** is a village at the mouth of a small stream situated  $2\frac{2}{10}$  miles southwest of St. Siméon wharf. There is no anchorage off it, but small craft occasionally secure loads of cordwood while lying on the little beach at the mouth of the stream. There is a small, inconspicuous church on the point near which the village is situated.

**Cape Salmon**, is high, bold, and precipitous, with very deep water close to, the deepest water found in the north channel being about 4 cables from the lighthouse. The high land immediately back of cape Salmon is separated from the back ranges by undulating grassy lands.

**LIGHT** (Lat.  $47^{\circ}-46'-09''$  N., Long.  $69^{\circ}-54'-20''$  W.).—A square white lighthouse, 46 feet high, with a red lantern, rising from the middle of the southeastern side of the keeper's dwelling, is situated on the point about 4 cables northeastward of cape Salmon,—locally known as *pointe des Roches*. It exhibits, at 82 feet above high water, a *fixed group flashing white light showing three flashes at  $3\frac{1}{2}$  seconds interval every 20 seconds*. This light is visible 14 miles. From the west-southwestward, when bearing eastward of N.E. by E.  $\frac{1}{4}$  E., the light is obscured by the land.

**Fog signal**.—A diaphone, operated by compressed air, gives 3 blasts every minute, thus: blast  $2\frac{1}{2}$  secs.; silent 5 secs.; blast  $2\frac{1}{2}$  secs.; silent 5 secs.; blast  $2\frac{1}{2}$  secs.; silent  $4\frac{1}{2}$  secs.

**Signal station**.—There is located here a marine signal, telegraph and telephone station. (See page xliv.)

**The shore** from cape Salmon trends to the westward for nearly 2 miles and then again to the southwestward for 3 miles to cape Eagle. It is high, bold and precipitous, except off port au Saumon, a small cove which coasting craft can enter at high water. There is a small sawmill here close to the water's edge. Two small wooded islands about 20 feet high are on the edge of the drying flat which fills the cove.

**Government wharf, St. Fidèle**.—About half way between port au Saumon and cape Eagle, is a small jetty with 14 feet of water at its outer end, dropping at once to 6 or 8 fathoms,



and then to very deep water. The wharf is provided with a slip. A road leads to the village on the plateau above, on which St. Fidèle church is conspicuous. In 1921 St. Fidèle had a population of 1,067. The principal industries are farming and pulpwood.

**CAPE EAGLE**, a high wooded cape, is S.W. by W.  $\frac{1}{2}$  W.,  $5\frac{1}{4}$  miles from cape Salmon. A small rocky ledge covered at high water projects about one cable from the south side of the cape. At certain stages of the tide there are heavy tide rips and eddies off the ledge, which are dangerous for small boats.

**The shore.**—After trending W.N.W. for about 3 cables the shore runs W. by S.  $4\frac{1}{2}$  miles to cap à l'Aigle, and is bordered all this latter distance by a rocky ledge covered with sand and large boulders which begin to uncover at about half tide. This ledge is steep-to until it bends into the small bay just north of cap à l'Aigle pier, where the 10-fathom line is 2 cables from the drying line. The shore between cap à l'Aigle and cape Eagle is of high earth cliffs, wooded, and penetrated by several small streams.

**Tidal streams.**—Between cape Eagle and cap à l'Aigle a back eddy sets up on the ebb, and small vessels working up against the tide can frequently gain a good deal by keeping close to the edge of the flats.

**CAP A L'AIGLE** is a summer resort much frequented by visitors from Quebec. The resident population was 444 in 1921. There is no railway connection.

**Government wharf.**—A wharf, built out from the cliffs at the western end of cap à l'Aigle, has a length of 175 feet, a frontage of 148 feet and a depth at its outer end of 25 feet at low water. It is provided with a movable slip, and a large freight and passenger shed and open shelter. The steamers of The Canada Steamship Lines Limited call at the wharf.

**LIGHT** (*Lat.  $47^{\circ}-39'-39''$  N., Long.  $70^{\circ}-05'-49''$  W.*).—A mast on the southwest end of the pier exhibits, at 38 feet above high water, a *fixed white* light, that should be seen at a distance of 6 miles in clear weather.



**Anchorage.**—Small vessels can obtain temporary anchorage in 10 fathoms of water, with cap à l'Aigle pier light bearing West distant about 3 cables, but the holding ground is bad and the tidal streams strong.

**MURRAY BAY (Malbaie),** lies between cap à l'Aigle and pointe au Pic. The bay is one mile deep, but is filled by a flat which dries from 3 to 10 feet at low water, with the exception of a few pools and the shallow discharge of Murray river. This river flows down a fine valley and drains a considerable extent of country, but is rapid and unnavigable. The flat commences three quarters of a mile westward of cap à l'Aigle, its outer edge trending approximately to a position half a mile eastward of Murray bay pier, thence to the land northward of that pier. It is made up of mud, sand and scattered boulders. Small vessels can carry from 10 to 12 feet at high water to near the head of the bay, where they lie on the flats for loading. A large sawmill is opposite Malbaie village on the north shore of the bay, whence lumber is lightered off to steamers lying at the anchorage off pointe le Heu. The edge of the flats is fairly steep-to on the northern part, but the shoal water extends on approaching pointe au Pic.

**Shoals.**—Two small rocky heads carrying 15 and 24 feet of water lie close together off the middle of Murray bay on the edge of the 10-fathom line, distant about 3 cables from the edge of the flats. From the 15-foot patch, St. Etienne church bears N.N.W.  $1\frac{6}{10}$  miles, and Murray bay pier light bears S.W. by W.  $\frac{3}{4}$  W.  $10\frac{1}{2}$  cables. The 24-foot head lies one cable north-east of this position. There are depths of from 8 to 10 fathoms between these two shoals and the edge of the 3-fathom line.

A large boulder, which is just covered at low water, lies one cable east-northeast of Murray bay pier, and care must be exercised on coming alongside or on leaving the pier, to avoid being swept on to this by the tide.

**Buoy.**—A red conical buoy, No. 100B, is moored off the edge of the 3-fathom line on the southern extreme of the shoal off pointe au Pic, with Murray bay pier light bearing W.  $\frac{1}{2}$  N., distant 4 cables.



**Leading mark.**—St. Irénée church bearing W.S.W., well open southeastward of cape Sain, leads 2 cables southeast of the edge of the shoal water off Murray bay, and should be kept on this bearing to clear the 15 and 24-foot shoals lying off the centre of the bay.

**Government wharf.**—A wharf extends southeastward from the shore at nearly a cable northeastward of pointe au Pic, and is known as Murray bay pier. It has a depth at the lowest tide of 15 feet at its outer end. A basin on the east side has been dredged to a depth of 15 feet at low water. The dredged area is 100 feet wide, in line with the front face of the wharf, and extends shoreward 340 feet with a width of 72 feet at the inner end. The wharf is provided with a movable slip. A railway siding has been built on the east side of the wharf.

When approaching the pier its northeastern side should be kept hidden by the southeastern front.

**LIGHT** (*Lat. 47°-37'-20" N., Long. 70°-08'-25" W.*).—A white lantern on the red roof of the freight shed on Murray bay pier, exhibits, at 36 feet above high water, a *fixed white* light, which should be seen from a distance of 10 miles in clear weather.

**Anchorage.**—Good anchorage can be obtained off Murray bay at a distance of about 6 cables from pointe le Heu, with St. Etienne church bearing about N.W.  $\frac{1}{2}$  W., just open of the point. The bottom is clay, good holding ground, and the depth 12 fathoms. This position is out of the strength of tidal streams and well sheltered from the prevailing winds, but a vessel should be well moored if staying any length of time, as the edge of the shoal is but a quarter of a mile distant. There is anchorage also a quarter of a mile farther out in 14 fathoms, but here the tidal streams are very strong. Temporary anchorage can be obtained by a steam vessel in 17 fathoms, with the outer end of Murray bay pier at pte. au Pic bearing N.W. by W., distant about 4 cables, but the tidal currents here are very strong, with occasional heavy tide rips.



A comfortable berth for a small steamer for the night can be picked up just off the edge of the 10-fathom line to the southward of the pier, with the pier light bearing about N. by E., distant 2 cables.

**Directions.**—From the eastward, bound for the anchorage off *pointe le Heu*, give the shore a berth of half a mile to clear the shoal water between *cape Eagle* and *cape à l'Aigle*. From the westward keep *St. Irénée* church well open southeastward of *cape Sain*, to clear the edge of the flats which fill *Murray bay* and the shoals off the middle of the bay, and when *St. Etienne* church bears N.W., haul in to the anchorage.

**Tides.**—It is high water, at *Murray bay*, 1h. 02m., and low water 1h. 07m. after *Father point*. Springs rise  $17\frac{1}{2}$  feet, neaps rise  $12\frac{3}{4}$  feet.

**Murray Bay village** is one of the best known and most frequented summer resorts on the north shore of the *St. Lawrence*, some 5,000 tourists visiting the place during the summer season. The village is situated on both sides of the mouth of the *Murray river* and extends as far as *pointe au Pic*. *St. Etienne* church close to the mouth of the river has a spire the summit of which, about 160 feet above high water, is a very conspicuous object. The settlements extend some miles back from the *St. Lawrence*. There are grist and sawmills on the river. Deals cut at the sawmills are mostly shipped to *Quebec* in small schooners, which lie aground, near or in the entrance of the river, but vessels occasionally anchor off the bay and take in cargoes of lumber. The population of *Malbaie* district and village was 4,265, and *pointe au Pic* 703 in 1921. There are several hotels for the accommodation of summer visitors, the *Manoir Richelieu*, on the cliffs above the pier at *pointe au Pic*, being very conspicuous.

**Wharf.**—A wharf, 300 feet long, is located on the west side at the mouth of river *Murray*, about 960 feet south of *St. Etienne* church, in the bottom of the bay. It runs southeastwards and dries 8 feet at low water. It can only be reached by vessels of light draught at high tide.



**Leading lights.**—Two *fixed red* lights are exhibited from poles projecting from the top of small white sheds; the front light, at an elevation of 25 feet, is situated near the end of the wharf and the back light, 645 feet N.W.  $\frac{1}{4}$  W. from the front light, is at an elevation of 45 feet. White daymarks are attached to the light poles. These lights in line lead through the eastern channel to the wharf.

**Communication.**—Murray bay is the terminus of the Quebec-Murray bay section of the Canadian National Railways, and steamers of the Canada Steamship Lines Limited running to and from Quebec call daily at Murray bay pier during the season of navigation.

**The shore** from pointe au Pic trends S.W. by W.  $\frac{1}{2}$  W. for a distance of about 3 miles, then curves to the south-southwest to pointe Jureux. It is steep to half a mile above cape Sain, whence it is bordered for  $2\frac{1}{2}$  miles by a drying flat and a narrow bank of shoal water.

**Government wharf, St. Irénée.**—This wharf lies  $4\frac{3}{4}$  miles S.W. by W. from pointe au Pic, in the shallow bight between cape Sain and pointe Jureux, and extends from the shore abreast of the lower village. It has a length of 666 feet and gives a depth of 18 feet of water at its outer end at low water springs. It is provided with a movable slip. Excellent fresh water can be obtained in any quantity from a standpipe on the wharf, on application to the Government agent on the wharf.

**LIGHT** (Lat.  $47^{\circ}-33'-30''$  N., Long.  $70^{\circ}-12'-09''$  W.).—A small, square lantern on the apex of the brown roof of the drab coloured freight shed, at the outer end of St. Irénée wharf, exhibits at a height of 32 feet above high water, a *fixed white* light, visible a distance of 7 miles in clear weather.

The village, on the small cliffs, above the mouth of the river, contains a church, several sawmills, a cheese factory and many summer cottages and residences. A large summer hotel is situated just off the beach to the southward of the pier. St. Irénée is a port of call of the Canada Steamship Lines Limited and the Canadian National Railway runs through the parish. The population in 1921 was 1,052.



**The shore** at pointe Jureux becomes steep-to and trends southwestward 2 miles to cape Corneille.

**Petite Malbaie** lies between cap Corneille and the north-east extreme of Goose cape, one mile southwestward, and is filled with a reef which does not extend beyond the line of its entrance points.

**GOOSE CAPE (Cap aux Oies)** is a small wooded bluff, the end of a spur of the higher ranges. It is bold, and landing may be effected in ordinary weather in a small cove westward of the lighthouse. The ebb stream off the cape is rapid.

**LIGHT** (*Lat. 47°-29'-15" N., Long. 70°-14'-00" W.*).—A square white lighthouse, 42 feet high, with a dwelling attached, on Goose cape, exhibits, at 55 feet above high water, an *occulting white* light, visible *10 seconds*, eclipsed *5 seconds*, which should be seen from a distance of 12 miles in clear weather.

**Fog horn.**—A hand fog horn answers vessels' signals in foggy weather.

(*For continuation North shore see page 218.*)

Variation 20° 45' W.



## CHAPTER XVIII.

### HARE ISLAND REEFS, SOUTH CHANNEL SHOALS, MORIN SHOAL, AND ENGLISH BANK

*(Continued from page 79.)*

**The navigable waters of the St. Lawrence** between White island and pointe aux Orignaux are divided into two channels, known as North and South channels. These are separated, abreast of rivière du Loup and cape Dogs, by a bank which runs for a distance of about 24 miles, in a northeast and southwest direction, from White island reef to the southwest end of Hare island bank. On this bank are White island with Hare island North reef, Hare island with the adjacent Brandypot islands, and Hare island South reef, with the few islets which surmount it.

**White island**, a small wooded islet on Hare island North reef (which is the northeast extreme of this dividing bank), is situated W. by N.  $\frac{3}{4}$  N.,  $6\frac{1}{4}$  miles distant from the southwest end of Cacouna island. It is small and sandy, with trees about 40 feet high, and at low water when the reef is showing, it appears only as a clump of trees on the reef.

**HARE ISLAND NORTH REEF (White island reef)**, on which White island is situated, is a narrow ridge of slate  $3\frac{1}{4}$  miles long and 3 cables wide at its widest part, lying in a N.E.  $\frac{3}{4}$  E. and S.W.  $\frac{3}{4}$  W. direction, and situated in the middle of the river a little more than half way from Cacouna to bay of Rocks. There are numerous boulders on it, those towards the northeast end drying about 12 feet, whilst to the southwestward of White island are some groups which seldom cover. Close to the southwest end is a small islet one foot high. The northeastern point of the reef is uneven in height, and appears as a series of small islets as it covers with the rising tide. Detached about 3 cables from the northeastern point are two small reefs which are dry 4 and 7 feet at low water. Very shoal water extends further northeastward for a distance of  $1\frac{3}{10}$  miles.

**Shoal.**—A small rocky head with 3 feet of water over it lies on the northern edge of the shoal water above mentioned

Variation  $21^{\circ} 30'$  W.



in a position from which the north extreme of White island bears S.W.  $\frac{1}{2}$  W.,  $2\frac{8}{10}$  miles, and the southwest end of Cacouna island bears S.E.,  $5\frac{6}{10}$  miles.

**Tidal streams.**—The tidal streams set very strongly onto and over the northeastern end of the reef, and must be carefully guarded against. Vessels without local knowledge should not attempt to pass between White island lightship and the reef. On the ebb tide as the reef dries, an eddy stream sets along the southeast side of the reef towards Hare island, which is useful for small craft making up against the tide.

**Anchorage.**—In calm weather temporary anchorage can be obtained off the northeast end of Hare island just inside the 10-fathom line, the best position being in 10 fathoms of water, with the northeast point of the island bearing about S.E. by E., distant 7 cables. This gives a berth of about  $2\frac{1}{2}$  cables from the 3-fathom line. Tidal streams are strong, but being along the coast, there is little danger of tailing on to the shore. The set of the ebb tide through the opening on the reef is not felt in this position, but is strong closer inshore.

**LIGHT-VESSEL.**—A steel vessel with two masts, and painted red with "White Island Reef No. 23" in white on each top-side, is moored in 8 fathoms of water, about  $3\frac{1}{4}$  cables north-eastward of the northeastern end of White island reef. There is a red ball on a stay between the masts. If for any reason the lightship is off her station the ball will be lowered. A cluster of *occulting white* lights encircle the foremast, visible all around the horizon, and elevated 40 feet above the water. Two standby lanterns are placed at the masthead which will show *fixed white* lights should the electricity fail.

**Fog signal.**—During thick or foggy weather and snowstorms, the light-vessel sounds a steam fog whistle thus: blast 5 seconds, silence 5 seconds; blast 5 seconds, silence one minute and 15 seconds.

**Submarine fog bell.**—During thick weather a submarine bell fitted to White island light-vessel strikes the light-vessel's number 5 every 18 seconds thus: 5 strokes at intervals of 2



*seconds*; interval *10 seconds*. There may be slight variations in these intervals. If vessels be not fitted with apparatus for receiving submarine fog signals, the sound can sometimes be heard at a considerable distance by descending to a position inside the ship, below the water line and close to the side, the engines being stopped. The approximate bearing of a fog bell can frequently be picked up in this way some time before the ordinary fog whistle is heard.

**HARE ISLAND**, the northeastern end of which bears S.W.  $\frac{1}{4}$  S.,  $1\frac{6}{10}$  miles from White island, is nearly joined to Hare island North reef at low water, when the passage is only available for canoes. It lies in a direction, N.E.  $\frac{3}{4}$  E. and S.W.  $\frac{3}{4}$  W., and is 7 miles long, its greatest width being a little over 8 cables at about one third of the distance from the northeast end. It rises gradually from both ends to a summit over 300 feet high. To the southeastward of the summit, close to the shore line, is another wooded hill about 200 feet high, which in conjunction with White island, gives a clearing mark to the vessels using the channel to the northward of Red islet bank. A narrow drying reef extends in a northeasterly direction to a distance of about 7 cables from the northeast end of the island, and at about 3 cables southward of the same point, is a long narrow isolated reef 2 feet high. The shore along the northwest side for a distance of about  $2\frac{1}{4}$  miles from the northeast end, is fringed by a drying bank which extends to about a cable from the shore, with rocky heads lying just outside it. Thence to the southwest point it is fairly steep-to, the 3-fathom line being nowhere more than a cable distant, with depths of 12 to 20 fathoms within 5 cables of the shore.

Off the southwest end, a drying reef on which is situated a small wooded islet, stretches to a distance of 2 cables in the same line as the general trend of the island.

The southeastern side of Hare island is more broken up, and has a greater extent of shallow water off it than the northwest side.

**Beacons.**—At about a mile from the southwest end of the island is a group of white beacons, which are used for placing the various buoys in the district.



**BRANDYPOT ISLANDS** are three islands joined together at low water, and situated southeastward of Hare island at about  $1\frac{3}{4}$  miles from its northeastern end. The channel separating these islands from Hare island is 4 cables wide with a reef nearly in the middle, and through which a greatest depth of 9 feet can be carried at low water. There is a curious deep hole at the western entrance of the channels. The northern Brandypot is the largest, being about 4 cables long and one cable wide, lying about E.N.E. and W.S.W. It rises 170 feet to a wooded conical summit and falls in cliffs to the northward.

The northeastern islet is small and wooded, and about 30 feet high. The southeastern islet is white and almost bare of trees; its southeastern extreme has deep water close to.

**LIGHT** (*Lat.*  $47^{\circ}-52'-15''$  N., *Long.*  $69^{\circ}-40'-50''$  W.).—A white circular brick tower, having a red lantern, rising from the middle of a square white dwelling with a red roof, the whole building being 39 feet high, and situated 84 yards within the southeastern end of the southeastern Brandypot, exhibits, at 71 feet above high water, a *fixed white* light, which should be seen from a distance of 10 miles in clear weather.

**Brandypot bank**, on which the depths are less than 3 fathoms, extends southeastward of Hare island, both to the northeast and southwest of Brandypot islands.

**Shoals.**—A shoal spot, with 10 feet of water over it, is situated S.W.  $\frac{1}{2}$  W.,  $1\frac{1}{2}$  miles from Brandypot lighthouse and 8 cables from the nearest point of Hare island. A shoal with 16 feet of water over it is situated S.W.  $\frac{3}{4}$  W.,  $3\frac{1}{2}$  miles from Brandypot lighthouse; a rock with 14 feet of water over it, lies 3 cables westward of this shoal; and a bank with 15 feet of water on it is situated S.E. by E.  $\frac{1}{8}$  E.,  $4\frac{1}{2}$  cables from the southwestern point of Hare island.

**Leading mark.**—To clear the outer depth of 15 feet on the edge of the 3-fathom contour northeast of the Brandypot islands, the 650 foot hill southwest of St. André should be seen between Middle and Great Pilgrim islands, bearing about S.W. by S. This line also leads clear of, but close to, the southeastern



side of the White island reef, and using these marks in the latter case, it would be better to keep the hill in line with the western summit of Great Pilgrim island bearing about S.W.  $\frac{3}{4}$  S.

**Anchorage.**—Small vessels shelter northeastward or southwestward of Brandypot, according to the wind, in 13 to 16 feet of water. Large vessels anchor as convenient in Brandypot channel or Hare island channel south of Middle bank. The holding ground is good throughout.

**Tides and tidal streams.**—It is high water full and change at Brandypot, at 3h. 08m., or 46 minutes after Father point; springs rise  $17\frac{1}{2}$  feet, neaps, 12 feet. The following table shows the height of tide at every hour after low and high water ordinary spring tides:—

After low water—Flood tide				After high water—Ebb tide			
	H.	M.	Ft.		H.	M.	Ft.
At Brandypot .....	0	0	0.0	At Brandypot .....	0	0	16.8
“ .....	1	0	1.1	“ .....	1	0	15.8
“ .....	2	0	4.1	“ .....	2	0	12.8
“ .....	3	0	8.3	“ .....	3	0	8.8
“ .....	4	0	12.4	“ .....	4	0	4.9
“ .....	5	0	15.7	“ .....	5	0	2.0
“ .....	5	50	16.8	“ .....	6	0	0.3
				“ .....	6	34	0.0

NOTE.—To reduce above heights to chart datum add 0.7 feet.

In neap tides, the rise not being so great as in ordinary springs, the proportionate rise and fall for every hour is also less, and an allowance must be made accordingly.

In Brandypot channel the flood stream begins 2h. 04m. after low water at Father point, and runs for 6h. 05m. The ebb stream begins 1h. 46m. after high water at Father point and runs 6h. 20m.

The rate of the tidal streams in South channel is from 2 to  $3\frac{1}{2}$  knots.

**Barrett ledges** are two small rocks with deep water between and around them. The eastern rock has 5 feet over it, and is situated E.  $\frac{1}{2}$  S.,  $2\frac{4}{10}$  miles from Brandypot lighthouse, and the western with 10 feet of water over it lies E. by S.  $\frac{1}{8}$  S., 2 miles from the same lighthouse.



**Light-and-bell buoy.**—A red iron conical topped light-and-bell buoy, No. 38B, is moored close eastward of the eastern rock, and exhibits an *occulting red* light, the light being occulted about every 6 seconds. This should be visible about 8 miles. The bell is rung by the motion of the buoy on the waves.

**Buoy.**—A conical steel buoy painted red, No. 40B, is moored close east of the western rock.

**Leading marks.**—The highest hill (650 ft.) over St. André, open eastward of Great Pilgrim island, bearing S.W.  $\frac{1}{2}$  S., leads southeastward, and Hare island summit, in line with the north-eastern edge of Brandypot, bearing W.  $\frac{1}{2}$  N., leads northward of these ledges.

**Middle shoals** lie to the southwestward of Brandypot lighthouse, distant  $1\frac{1}{2}$  miles. They are composed of several rocky patches, the northeastern of which is known as the Marmen rock, and the southwestern one as Demers rock. They are separated from each other by fairly deep water.

**Marmen rock**, with 5 feet of water over it, lies S.E.  $\frac{3}{4}$  E.,  $1\frac{1}{2}$  miles from Brandypot lighthouse. Shoal water extends to a distance of 3 cables southwestward of this position.

**Demers rock**, with 9 feet of water over it, lies 5 cables southwestward of Marmen rock, and S.E.  $\frac{3}{4}$  S., nearly  $1\frac{1}{2}$  miles from Brandypot lighthouse.

**Buoys.**—A conical steel buoy painted red, No. 42B, is moored close eastward of the Marmen rock; and a steel conical buoy painted red, No. 44B, is moored close east of Demers rock.

**Leading marks.**—The apparent eastern summit on the southern shore of the river, in line with the northern extreme of Cacouna island, bearing E.N.E., leads close southward of these rocks.

**MIDDLE BANK** extends about S.W. by W.  $\frac{1}{4}$  W. from Middle shoals towards Hare island bank, the greatest depth on it being 27 feet. A shoaler patch 6 cables long lies on this bank, the northeast end of which has 17 feet of water over it and is on the



prolongation of the line joining the southeastern side of White island to the western point of Brandypot island, and distant from the latter  $4\frac{1}{4}$  miles. The least water on this bank is 15 feet near the southwest end, and it bears E. by S.  $\frac{3}{4}$  S., distant 2 miles from the southwestern end of Hare island.

**Buoy.**—A conical steel buoy painted red, No. 46B, is moored in 25 feet of water on the southeastern edge of Middle bank, and to the south-southwestward of the above 15-foot patch, with the two pyramidal beacons on Hare island in line, and White island about midway between Brandypot and Hare islands.

**Leading marks.**—The northeastern extreme of Hare island in line with the eastern end of Brandypot, bearing about N. by E.  $\frac{1}{4}$  E., leads over Middle bank in about 27 feet of water.

**HARE PASS**, lying between Hare island and Hare island South reef, is used by local steamers crossing between Murray bay and Rivière du Loup, and has depths of from 12 to 18 feet in the channel.

The tides sweep through the pass at the rate of from 4 to 5 knots at springs, with strong eddies, especially on the ebb.

Heavy tide rips frequently extend the whole distance between Middle bank and the southwest point of Hare island.

**Buoy.**—A can buoy, No. 50B, painted black and white in vertical stripes, is moored, in  $2\frac{1}{2}$  fathoms, on the line between Hare island and Hare island South reef. From the buoy the small detached islet off the southwest end of Hare island bears N.E.  $\frac{1}{2}$  E., distant 9 cables. This buoy, which marks mid-channel, may be passed close to on either hand. For a distance of 4 cables on either side of the buoy no less than 12 feet at low water should be found.

**Leading marks.**—In using this channel, should the buoy not be placed, St. Siméon church, on the north shore, should be kept bearing N.W.  $\frac{3}{4}$  N., with the conspicuous granite patch on the back range kept open to the westward of the church, when 13 feet of water will be carried through the pass. On White island being seen clear of the east side of Hare island, course may be altered as necessary. (*See page 168.*)



**HARE ISLAND SOUTH REEF.**—The eastern end of the drying portion of this reef lies  $1\frac{3}{4}$  miles S.W. of Hare island, and thence the reef extends 3 miles to the southwestward, with a breadth of one quarter of a mile. There are 5 small islets on the ridge of this reef, the middle and the largest being 4 cables long, and about one cable wide. On this islet are some spruce trees from 20 to 30 feet high. The smaller islets are covered with grass and small bushes and are from 4 to 6 feet high.

The southwest end of the drying reef is fringed by rocky ledges with less than 6 feet over them at low water, and a rocky ledge which is always covered extends 4 cables from the north-eastern point.

**Shoal.**—An isolated rocky head carrying 4 feet of water over it lies northwards just inside the 3-fathom line off the southwest point of this reef. From this rock the southwestern islet of the reef bears E.  $\frac{1}{2}$  N., distant  $9\frac{1}{2}$  cables, and cape Salmon lighthouse bears N.W. by N.,  $3\frac{3}{10}$  miles.

**Hare island knoll.**—To the northeast of Hare island South reef, the 3-fathom contour extends towards the Middle bank. On the northeast end of this spit, at a distance of  $1\frac{4}{10}$  miles southeast of the southwest end of Hare island, there is a depth of 13 feet at low water.

**HARE ISLAND BANK**, composed of sand and gravel, extends in a southwesterly direction from Hare island South reef, for a distance of  $5\frac{1}{2}$  miles. The breadth inside the 5-fathom contour off the southwest end of the drying part of the reef is about 2 miles. It then narrows and deepens gradually until the 10-fathom contour is reached, when it drops into deep water abreast of the northeast end of Burnt island.

The bank inside the 3-fathom contour off Hare island South reef is very level for a distance of 2 miles southwestward of the reef, having a depth on it of 8 or 9 feet, but there is a slight rise of ground, with only 7 feet of water over it  $1\frac{3}{4}$  miles from the southwestern end of the 3-fathom bank, in a position with Pilgrim island lighthouse bearing about E.  $\frac{1}{2}$  S.,  $4\frac{1}{10}$  miles. From this position the water deepens gradually southwestward.



On the southern side of Hare island South reef, the water is very shoal, there being depths of little over one fathom close to the edge of the 3-fathom contour. A rock with 5 feet over it lies  $6\frac{1}{2}$  cables S.E.  $\frac{3}{4}$  S. from the northeastern end of the largest island on South reef.

The 3 and 5-fathom contours on the southwest side of Hare island South reef and Hare island bank are as well defined as those of St. André bank abreast of them. There is deep water between Hare island bank and St. André bank, the depth in mid channel increasing from 8 to 10 fathoms abreast of the southwest end of Long Pilgrim island, to over 20 fathoms off Grande island.

**Buoy.**—A red conical buoy, No. 52B, is moored in 6 fathoms of water on the southeast edge of the bank, with the two white beacons on the eastern end of Grande island in line bearing S.  $\frac{1}{8}$  E., distant  $1\frac{6}{10}$  miles.

**MORIN SHOAL** lies nearly in mid-stream on a line between Kamouraska and pointe au Pic. Within the 10-fathom line it is three quarters of a mile long E. by N. and W. by S., and about 6 cables broad. The least depth on the shoal is 20 feet, situated 3 cables from the eastern end; the shoal is hard ground.

**Clearing marks.**—In clear weather, should the buoy be not placed, the fall of the land about cape Dogs should be kept open southeastward of cape Salmon.

The line cape Dogs and cape Salmon bearing about N.E., should lead nearly half a mile southeastward of the shoal. Or the highest Brandypot island in line with the southwestern point of Hare island, bearing N.E. by E.  $\frac{1}{4}$  E., should lead about one mile southeastward of the shoal.

**Light-buoy.**—A light-buoy, No. 102B, painted red and black in horizontal bands is moored in a position with Grande island light bearing E. by S., distance  $7\frac{2}{10}$  miles, and Murray bay pier light, N.W.  $\frac{3}{4}$  W., distance  $4\frac{3}{10}$  miles. The light is *white, occulting* at short intervals, 30 feet high, and should be visible at a distance of 12 miles around the horizon.



**ENGLISH BANK** proper extends from a position 4 miles N.N.W. of pointe aux Orignaux for about 10 miles S.W. by W.  $\frac{1}{4}$  W., to Middle ground, with a width of about half a mile at its eastern point, gradually increasing to  $1\frac{1}{2}$  miles. Comparatively shoal water with depths of 9 to 13 fathoms continues north-eastward to Morin shoal, and north-northeastward for about 5 miles. There is a depth of  $5\frac{1}{2}$  fathoms on the ridge of the bank, in a position bearing N.W. by W.  $\frac{1}{2}$  W.,  $3\frac{1}{2}$  miles from pointe aux Orignaux lighthouse and thence the water deepens gradually northeastward. The bank and the shoal water north-northeast of it affords good anchorage, and is much used in quiet weather by vessels waiting favourable opportunities to proceed up the river.

*(For continuation of description of islands, reefs, banks, etc., towards Quebec, see page 181.)*

Variation  $21^{\circ}$  W.



## CHAPTER XIX.

### DIRECTIONS FROM RED ISLET TO THE NORTH- EASTERN ENTRANCE OF ST. ROCH TRAVERSE

*(Continued from page 117.)*

**The river**, above Red islet, is divided into two channels, known as the North and South channels. North channel lies to the northwestward of Hare island and its adjoining reefs and of Morin shoal, whilst South channel lies between these reefs and the mainland of the south shore.

The large and full powered ships of the present day use the North channel almost entirely, but sailing craft and small steam vessels having good local knowledge of the tidal streams, make more use of South channel. In North channel the depths are very great, there being over 100 fathoms abreast of cape Salmon, and there is no anchorage of any sort, except off pointe le Heu, on the southwest tail of Hare island bank, and, as the water shoals, towards the English bank, while in South channel, if caught by adverse winds or tide, anchorage can be picked up anywhere.

**NORTH CHANNEL.**—Directions are almost unnecessary for North channel. Having passed Red islet and to the northward of White island reef light-vessel, course can be set to pass south-eastward of Morin shoal, in mid-channel, or nearer the Hare island side according as the tide is favourable or adverse. In foggy weather, a vessel with good sounding apparatus and knowing her position as regards Red islet, can safely use North channel. The 20-fathom bank of soundings between Hare island North reef and Red islet is continuous; and leaving the deep water southeastward of Red islet, this bank can be crossed, keeping the sound of White island reef light-vessel fog-horn and bell on the port side, until about 30 fathoms of water are picked up, when course can be altered to the southward and westward for mid-channel. It should be remembered that on the ebb tide there usually is a strong set northeastward through Hare pass.

Variation  $21^{\circ} 30'$  to  $20^{\circ} 30'$  W.



**Caution.**—Great caution must be exercised on approaching Morin shoal in foggy weather, as the drop from the northeast edge of the extension of English bank to deep water is very sudden, and there is only a distance of about 8 cables from the  $3\frac{1}{2}$  fathoms on Morin shoal to depths of 20 to 30 fathoms.

**Directions.**—In North channel, in clear weather, a good mid-channel course is as follows: Having passed White island light-vessel with the southwest point of White island distant about 3 miles, in line with Brandypot lighthouse, bearing S.S. W.  $\frac{1}{4}$  W., course can be laid S.W.  $\frac{5}{8}$  W. 27 miles, to pass south-east of Morin shoal at a distance of about a mile. (On approaching Morin shoal, should the buoy not be placed, the land about cape Dogs should be kept just open eastward of cape Salmon, the latter point bearing N.E.) From this point steer S.W.  $\frac{7}{8}$  W.  $13\frac{1}{4}$  miles, to a position about one mile east of Middle ground buoy, for entering St. Roch traverse.

Should the White island light-vessel not be in position, the beacon on the shore just north of Cacouna pier should not be opened to the northward of St. George's spire until the line southwest end of White island and Brandypot lighthouse comes on, S.S.W.  $\frac{1}{4}$  W.

**SOUTH CHANNEL.**—As before stated, South channel is preferred by small vessels, especially by those having local knowledge of the tidal currents, as the streams are not so strong and nowhere is the water too deep for anchorage. **Brandypot channel** between Middle and Brandypot banks is seldom used, the course to the southward of the centre shoals being more direct, and with the assistance of the buoys and leading lines, a vessel can beat up and down in this channel in perfect safety. (The 3 and 5-fathom contour lines in South channel above Pilgrim shoal and to cap au Diable are remarkably straight and well defined. On the south shore, from a position 4 cables N.N.E. of Pilgrim island lighthouse, the 5-fathom line is almost coincident with the 3-fathom line, being seldom more than 2 cables from it, running S.W. by W., and taking up the line of Grande and Burnt islands. From Burnt island towards pointe aux Orignaux the 10-fathom line commences to extend out. At cap au Diable the 5-fathom line is  $1\frac{1}{4}$  miles from the shore.



**Directions.**—From a position with the southwest end of Green island bearing E.S.E., distant 2 miles, a course can be laid S.W., 7 miles, to pass 6 cables southeast of Barrett ledges. The highest hill of St. André (650 feet) seen open to the eastward of Great Pilgrim island bearing S.W.  $\frac{1}{2}$  S. leads one cable east of Barrett ledges. This hill should be kept east of the eastern summit of Great Pilgrim island, until Middle shoals are passed. From the position 6 cables southeast of Barrett ledges a direct mid-channel course S.W. by W.  $\frac{1}{4}$  W., for 19 miles, leads to a position W.N.W.,  $1\frac{1}{10}$  miles from Grande island lighthouse, passing about 4 cables west of the southwest end of Pilgrim shoal. The northwestern sides of Grande and Burnt islands in line bearing S.W.  $\frac{3}{4}$  W., lead to the southward of the shoals on the Middle bank and nearly 2 cables southward of the southwest end of Pilgrim shoal. From the above position off Grande island, a course S.W. by W.  $\frac{7}{8}$  W., for  $18\frac{1}{2}$  miles, will lead to a position about 5 cables S.E. of Middle ground light-buoy No. 56B.

If from a position in the vicinity northwest of White island lightship it is desired to make South channel, the highest hill of St. André should be brought into line with the western summit of Great Pilgrim island bearing S.W.  $\frac{7}{8}$  S. On White island bearing about N.W. the course should be altered slightly to the westward to bring the high St. André hill between Great and Middle Pilgrim islands. This line should lead half a mile to the eastward of the northeast point of Brandypot bank and the same distance to the westward of the Middle shoals, crossing the Middle bank in about 25 feet of water. When the northwest sides of Grande and Burnt islands come into line bearing S.W.  $\frac{3}{4}$  W., the course can be steered as before directed in mid-channel, or along the edge of the banks as in following paragraph.

Vessels of moderate draught approaching from the eastward can avoid the strength of the ebb tide by making a course along the edge of the 5-fathom line. Here the ebb stream is much weakened, and when the flats are dry is almost unfelt. When, after passing Pilgrim shoal the spire at Notre Dame du Portage is shut in by the north end of Great Pilgrim island bearing E.  $\frac{1}{4}$  S., course may be altered to bring the southeast



side of Burnt island in line with the southeast side of Grande island bearing S.W.  $\frac{3}{4}$  W. No less water than 6 fathoms will be obtained along this line, but it leads close to the edge of the banks. Course should be altered on approaching the northeast end of Grande island, to pass that island and Burnt island on the northwest side at a distance of about 3 cables.

Having passed Burnt island, by keeping the southeast side of Grande island bearing about E.N.E. well open of the northeast point of Burnt island, a course will be made just outside the 5-fathom line until abreast of pointe aux Orignaux, then steer for entering the Traverse. At night, of course, only an off-shore course can be used, and the vessel's position must be ascertained and verified as frequently as possible. (*For continuation see page 194*).

**HARE PASS.**—Except at high water and in clear weather this passage, which has nowhere a greater depth than 15 feet, should not be attempted by vessels without local knowledge. Tidal currents are very strong and very erratic. Vessels of light draught coming up South channel having passed Demers rock and wishing to cross to North channel, should bring the south side of Cacouna island bearing E. by N.  $\frac{3}{4}$  N. in line with the easternmost of the two small wooded hills, about 240 feet high, on the mainland to the eastward of Cacouna. This line should be held until a conspicuous granite patch on the high hills on the north shore behind St. Siméon village is seen open westward of St. Siméon spire, the latter bearing about N.W.  $\frac{7}{8}$  N.—this line leads across the shoal neck between Hare island and Hare island South reef at its narrowest part. On White island being seen open northward of Hare island, course can be altered as necessary. (*See page 161*.)

Variation 21° W.



## CHAPTER XX

### TIDAL STREAMS BETWEEN RED ISLET AND POINTE AUX ORIGNAUX

As a general rule the tidal streams set fairly along both channels, being occasionally deflected by banks or attracted by openings through the reefs.

**North channel.**—A portion of the flood stream, coming up from the northward and passing Red islet bank, after turning slightly into Basque road sets fairly up the river by North channel. Part of the stream, which has curved to the eastward of Red islet bank, and then recurved, runs to the southwestward and joins up with the flood stream running along Green island. A portion of these two streams sets strongly across the northeast end of Hare island North reef in a west-northwest direction, joining with the main body of the stream influencing it in the direction of the bay of Rocks. There is a considerable indraught into this bay as soon as the flats begin to cover, which sailing vessels with light wind must guard against.

A set to the westward is felt abreast of Hare pass, caused by part of the flood stream, which is making up South channel, setting through here.

Abreast of cape Eagle the flood stream divides, and runs on both sides of Morin shoal and English bank increasing its speed as it ascends the river.

**South channel.**—A portion of the flood coming along the Green island shores makes straight for South channel, and a strong set occurs to the southeastward across the reef off the southwest end of Green island. The meeting of this current with the flood stream coming up between Green island and the mainland sets up a heavy tide rip off the point. As before stated, a portion of the flood sets west and west-northwest, over the northeast end of Hare island reef; but the main body of the stream sets fairly up the main South channel, being strongest in the deep water in Brandypot channel.



A considerable body of water sets through the Hare pass; deflecting the main body of the flood in the North channel in a westerly direction. The strength of the spring flood diminishes, from 3 to  $2\frac{1}{2}$  knots in Brandypot channel, to one knot off the Kamouraska islands, but again increases in strength on approaching St. Roch traverse.

**The ebb stream**, in the main, takes a direction opposite to the flood, but, (especially on the north side of the river) on the south side of nearly every cape an eddy sets up inshore, running sometimes for two or three miles up stream before turning out and rejoining the ebb. This back eddy seldom extends for a greater distance than half a mile from shore. Heavy tide rips also set up on the ebb over uneven bottoms, or off prominent points or bays whence cross streams set out.

In Hare pass, on the ebb, the currents are very erratic with strong eddies, sometimes setting northeastward into South channel, and sometimes curving between South reef and Hare island to run along the northwest shore of that island. Unless a vessel is under good control, by means of steam or a fresh breeze, she should not attempt this passage, especially during spring ebbs. There are frequently heavy tide rips extending from the Pass to Middle bank.

As the flats dry along the south shore, the ebb weakens along the edge of the banks, and local craft invariably use South channel in making up against the tide. After half tide the ebb will be almost unfelt if a course be steered close along the edge of the 3-fathom contour line off the south shore. The ebb, running along the south shore, curves out from a little bay formed by pointe Rivière du Loup and running along the south side of the wharf makes it difficult to berth a vessel on the falling tide until nearly low water.

In Cacouna anchorage the ebb sets northward across the reef off the southwest end of Green island, and northeastward through the Green island channel, but as the flats dry in the northeast portion of this channel and commence to uncover, the stream changes its direction between the island and the mainland, and runs to the southwestward towards the anchorage.



In the vicinity of the northeast part of Hare island North reef, the beginning of the ebb sets northward, and meeting the ebb from North channel frequently sets up a heavy rip, but after the first hour it takes up the general direction of the main body northeastward.

A back eddy runs along the edge of the shoal water off Hare island North reef, from the northeastern end of the reef to near White island, where it curves outward again.

In the eastern part of North channel, when about abreast of cape Dogs and the bay of Rocks, part of the ebb runs along the steep shores towards Basque road, where it is deflected eastward by the shoaler water and by Lark reef. Another portion sets to the eastward across the tail of Hare island North reef, where it strikes the shoal water, and at the beginning of the ebb meets the set from South channel, causing heavy tide rips.

As the tides change and meet, between Hare island North reef, Red islet and Green island, a series of heavy tide rips is set up. These are usually on a rough line between the eastern end of Green island and White island light-vessel, varying their position along this line as the beginning of the stream moves east or west.

The flood and the ebb are less unequal in duration in North than in South channel, and in both channels the flood and ebb streams, upon an average, continue three quarters and one hour respectively after high and low water by the shore.

The times of high and low water by the shore do not seem to be much affected by winds, but the amount of tidal rise and fall, and the duration of the streams, are considerably affected by strong winds. Nevertheless, as an approximation, near enough for practical purposes, when the stream of flood makes in mid-channel, the tide has risen by the shore at Brandypot  $1\frac{1}{4}$  feet, and at South traverse  $2\frac{1}{2}$  feet, and when the ebb stream makes, the tide has fallen about 2 feet by the shore.

NOTE.—The investigation by the Tidal and Current Survey have shown that the time of the tide and the turn of the tidal streams, between Father point and pointe aux Orignaux and the Traverse, can best be referred to the tidal station at Father



point, for which tide tables are published by that Survey. Above the Traverse, as far as the head of tide water at lake St. Peter, the tides can be referred with greater accuracy to Quebec.

The relation between the turn of the current in the offing and the tide by the shore had been ascertained at the more important localities when the chart surveys were made by the Admiralty. But the time of high and low water at these places could not be found with accuracy until simultaneous observations throughout the St. Lawrence brought them into relation with the tide of Father point and Quebec. The "Tide Tables for the Eastern Coasts of Canada" are published annually. (*See page lvi.*)



## CHAPTER XXI

### PTE. AUX ORIGNAUX AND GOOSE CAPE TO QUEBEC, BY SOUTH, MIDDLE AND NORTH CHANNELS

**Caution.**—Owing to the continuous dredging operations in parts referred to in this chapter, the positions of buoys are frequently altered, permanently to mark new limits to channels or temporarily to facilitate the work of the dredges. Light-buoys are also placed occasionally to give lines for dredging. Therefore "Notice to Mariners" should be carefully watched for remarks, and care taken to follow the directions as conveyed by distinguishing colours, numbers and marks of buoys.

**THE ST. LAWRENCE ABOVE OUELLE POINT** on the east, and cape St. Joseph on the west, is divided into three channels by shoals and islands, and the navigation becomes intricate. The eastern entrances of these channels are rendered more or less difficult from their narrowness, the want of good anchorage in them, or the rate of the tidal streams.

It is frequently stated by pilots and masters of coasting vessels that there is a considerable amount of magnetic attraction in the high cliffs of the northern shore, but observations taken by the officers of the Hydrographic Survey show that this is not the case.

**SOUTH CHANNEL** lies along the southern shore, and between it and the shoals and islands occupying the central part of the river from St. Roch traverse to Quebec. This channel is buoyed and is generally used for navigation. It is preferred by the pilots to the other channels, having excellent anchorage, and the rate of the streams being moderate in every part, except for a few miles in the traverse.

Vessels of 30 feet draught can navigate the lower St. Lawrence up to Quebec, except at near low water springs, by using this channel. The ship channel through the Beaujeu west narrows and northward of St. Thomas bank has been dredged to a depth of 30 feet at low water.

Variation 21° W. to 18° 45' W.



**MIDDLE CHANNEL** lies between the shoals and islands, which form the northern side of South channel, and the long line of shoals and reefs which extend from Coudres island to Reaux island. In one part of it, near the eastern entrance of Middle traverse, there are not more than  $2\frac{1}{2}$  fathoms at low water. Above this shallow part, there is room and water enough for vessels of large draught, until at the group of islands between Crane island and Orleans island, where Middle channel communicates with South channel by various narrow passages between the islands, in which there is plenty of water at all times, but the streams in them are rapid. Although, by placing buoys where requisite, it would be possible to take large vessels up to Quebec by Middle channel were it actually necessary to do so, yet it is too intricate and difficult for general navigation. This channel is not further described in this book.

**NORTH CHANNEL** runs along between the high northern shore of the river and Coudres island and the line of shoals which extends from the latter to Neptune rock and Burnt cape ledges, and thence through North traverse between the shoals which reach from Burnt cape ledges nearly to Reaux island, and those which lie off the northeastern end of Orleans island. From North traverse this channel continues between Reaux and Madame islands on the southeastern side, and Orleans island on the northwestern, till it unites with South channel opposite St. Vallier.

This channel was formerly in general use, but it is now little known to the majority of the pilots. It is broader than South channel, but the streams are much more rapid, and in the Narrows at its western end there is a depth of only 25 feet at low water.

Starting from Green island to Quebec, at the beginning of a fair tidal stream, a steam vessel with a speed of about 10 knots may, however, gain one hour in the passage by taking North rather than South channel.

The anchorage generally in North channel is not good, the bottom being foul from bay St. Paul westward to cape Maillard, and also on account of the rapidity of the tidal streams. There



is, however, anchorage on the northern edge of the bank on the southeastern side of the channel, in a depth of about 10 fathoms.

Between Coudres island and the northern shore of the river, there is anchorage only in bay St. Paul and Prairie bay, both of which afford security in any weather, but with northerly winds heavy squalls come down from the north shore hills.

Above Coudres island the channel is straight,  $1\frac{1}{4}$  to  $2\frac{1}{2}$  miles wide, and clear. The depth of water nowhere exceeds 18 fathoms at low water in mid channel, but it is generally about 11 or 12 fathoms, shoaling towards the sides of the channel, where there is good anchorage out of the strength of the streams. There is, however, more sea, and the streams are more rapid in this long and open reach than in the corresponding parts of South channel, and in the fall of the year, the northwesterly squalls off the mountains are heavy and frequent. Altogether, for general navigation, North channel is good, and it frequently remains free from ice for some time after South channel becomes unnavigable in the fall of the year.

This channel, except for the shoal water in the North traverse at its southern end, is considered to be the best and easiest for steam vessels to navigate, and is available for vessels of 28 feet draught at and above half tide. (*See page 228.*)

**ORLEANS CHANNEL**, between Orleans island and the north-western shore of the St. Lawrence, is a good passage for small vessels, but is not available for those of larger draught. (*See page 229.*)

## SOUTH CHANNEL

PTE. AUX ORIGNAUX AND THE SOUTH CHANNEL TO CRANE ISLAND

(*Continued from page 144*)

**Shoal water.**—From off pte. aux Orignaux the edge of the shoal water trends about W. by S.  $\frac{3}{4}$  S., gradually increasing its distance from the shore.

**Tides and tidal streams.**—It is high water at pte. aux Orignaux 1h. 35m., and low water 1h. 48m., after Father point. Springs rise  $18\frac{1}{2}$  feet, neaps rise  $13\frac{1}{2}$  feet.

Variation  $21^{\circ} 15'$  W.



The flood stream in the offing begins 2h. 18m. after low water at Father point, and runs 5h. 55m. The ebb stream begins 2h. 45m. after high water at Father point, and runs 6h.30m.

**Rivière Ouelle** flows into the St. Lawrence southward of Ouelle point, a prominent projection at  $3\frac{8}{10}$  miles southwestward of pte. aux Orignaux. The point rises gradually to a height of 108 feet, the western summit of a partially wooded ridge that extends some distance inland. A depth of 12 feet at high water can be carried up rivière Ouelle as far as the wharf, which is situated on the southern side of the river at  $1\frac{1}{2}$  miles from the point. The best channel passes southward of a small islet about midway to the wharf.

**Rivière Ouelle village** is situated about two miles up the river. It contains a church with spire, Notre Dame de Liesse. A bridge spans the river about two miles from Ouelle point. The population in 1921 was 1,405. Farming is the principal industry.

**Ste. Anne de la Pocatière village**, which contains a conspicuous church with a spire and a large college, stands on the slope of mont Ste. Anne, a prominent round hill, 395 feet high, situated S.  $\frac{1}{2}$  W.,  $3\frac{7}{10}$  miles from Ouelle point. Several conspicuous isolated hills lie southwestward of mont Ste. Anne. Mont Boutot, a remarkable truncated cone, 708 feet above high water, lies  $2\frac{1}{2}$  miles eastward of Ste. Anne. The population in 1921 was 2,885.

**Government wharf.**—A wharf, with a mean length of 734 feet dries at low water.

**St. Roch des Aulnaies** is a village situated W. by S.,  $6\frac{1}{2}$  miles from Ste. Anne de la Pocatière. It has a population of 1,183 and contains a church with two small spires, which stands close to the shore. Houses are situated along the road between these villages. The Canadian National Railway passes about two miles inland.

**Government wharf.**—There is an L-shaped wharf at St. Roch des Aulnaies, 432 feet long, which dries at low tide.



**Shoals of Ste. Anne.**—Ste. Anne bay lies between Ouelle point and St. Roch des Aulnaies, and the shoals of Ste. Anne extend to about 5 miles off its shores. The water shoals very rapidly along the greater part of the outer edge of the shoals, the distance between depths of 5 and 3 fathoms being less than one cable, and thence to 6 feet less than 4 cables.

**Buoys.**—A black can buoy with a white band 2 feet from top and a white circle painted on the top with 53B in black letters, lies in 7 fathoms on the northern edge of Ste. Anne shoals, with pte. aux Orignaux lighthouse bearing E. by N.  $\frac{1}{4}$  N., distant  $5\frac{7}{10}$  miles.

A black can buoy, No. 55B, lies in 5 fathoms on the north-western point of the shoals, with Ouelle point bearing E.  $\frac{1}{4}$  S., distant  $6\frac{1}{2}$  miles, and Upper traverse lighthouse, S.W.  $\frac{3}{4}$  W., distant  $4\frac{1}{2}$  miles.

**Leading mark.**—Cap au Diable, well open northward of pte. aux Orignaux lighthouse, bearing E. by N.  $\frac{1}{4}$  N., leads northward of, but close to Ste. Anne shoals when westward of buoy No. 53B, which it passes eastward of; and northeastward of the buoy for about 2 miles, this line passes just within the 5-fathom contour.

**Caution.**—The first of the flood stream sets directly on to the shoulder of the bank in the vicinity of the lower buoy, and obliquely to the westward.

**Anchorage.**—There is excellent anchorage in 7 to 10 fathoms, stiff mud bottom, along the edge of the bank from Kamouraska islands to Ste. Anne upper buoy, No. 55B.

**The shore** from St. Roch des Aulnaies takes a southwesterly direction for about 7 miles to St. Jean Port Joli and it is generally bordered by small cliffs, the end of slopes from wooded hills that rise 320 and 290 feet above high water.

From St. Roch point to St. Thomas, a distance of 24 miles, the shore is low, and composed of slate. Inland it rises gradually in a series of ridges to a long wooded range, which is  $4\frac{1}{2}$  to 6 miles distant from the river, and attains a height of 1,666



feet. The houses are almost continuous on this shore, with villages near the churches. Supplies in small quantities, with the exception of coal, may generally be obtained at the villages.

**St. Jean Port Joli.**—The village of St. Jean Port Joli, at 7 miles southwestward of St. Roch des Aulnaies, contains a church with spire. In 1921 the population was 2,022. The Canadian National Railway passed about two miles inland.

**Government wharf.**—There is a wharf at St. Jean Port Joli, 600 feet long, which has a depth of 4 feet of water at its outer end at low water.

**The shore** continues southwestward from St. Jean Port Joli, and  $2\frac{3}{4}$  miles distant is Port Joli, where there is a stream which admits small craft at half tide.

**Railway and telegraph.**—There are stations of the Canadian National Railway at about one mile inland from the villages of St. Jean Port Joli, L'Islet, St. Ignace, and St. Thomas.

**Rivière Trois Saumons**, a mile southwestward of Port Joli, has a large sawmill near its mouth. This river admits small craft at about half tide.

**L'Islet village**, with a population of 1,681 in 1921, is situated  $2\frac{3}{4}$  miles west-southwestward of rivière Trois Saumons. Its church has two spires. There is a conspicuous cross on a cliff, 59 feet high, situated about  $2\frac{2}{10}$  miles from rivière Trois Saumons, and one mile northeastward of L'Islet church. There is no regular line of steamers calling here, but the Canadian National Railway passes about two miles inland.

**Signal station.**—The telegraph and signal station at L'Islet is situated 100 yards northeastward of the church and close westward of the convent, which is a square stone building surmounted by a turret. (*See page xliv.*)

**Government wharves.**—There are two wharves at L'Islet. The main wharf has a length of 1,105 feet, with a depth of  $4\frac{1}{2}$  feet of water at its outer end at low water springs.

A smaller wharf is constructed near the inner end of the main wharf at right angles to it. Its length is 150 feet and dries at low tide.



**Tides.**—It is high water at L'Islet 1h. 17m., and low water 2h. 05m. before Quebec. Springs rise  $18\frac{1}{2}$  feet, neaps,  $13\frac{1}{2}$  feet.

The flood stream begins 1h. 19m. before low water at Quebec, or 46 minutes after low water by the shore, and the ebb stream begins 57 minutes before high water at Quebec, or 20 minutes after high water by the shore.

**The shore** from L'Islet trends about S.W. by W.  $\frac{1}{4}$  W. for nearly  $5\frac{1}{2}$  miles to a point on which there is a disused mill, whence there is a bight about  $1\frac{1}{4}$  miles across to cape St. Ignace. This bight dries at low water.

St. Eugène church, at about 3 miles southward of L'Islet, has a spire.

**Government wharf.**—There is a small wharf at anse à Giles,  $3\frac{1}{2}$  miles southwestward of L'Islet. It dries at about half tide.

**Cape St. Ignace** is a conical mound, 52 feet high, covered with small bushes.

**St. Ignace village**, with a population of 3,190 in 1921, is about three quarters of a mile within the cape. Its church has a spire. The Canadian National Railway passes about two miles inland.

**Government wharf.**—A wharf at which schooners call is situated on the eastern side of cape St. Ignace. It has a length of 1,259 feet but can only be approached at or near high water.

**The shore** from cape St. Ignace trends west-southwestward  $4\frac{1}{2}$  miles to a channel through which the united rivers Bras St. Nicholas, flowing from the eastward, and rivière du Sud from the westward, discharge their waters. The combined streams fall in a cascade about 30 feet high to a small bight, called the basin, at a quarter of a mile within Montmagny pier.

**Wharf.**—There is a small wharf situated  $1\frac{1}{4}$  miles southwestward of cape St. Ignace. It dries at about half tide.

**Montmagny town** (St. Thomas de Montmagny), is on both banks of rivière du Sud, half a mile within the entrance. Its church has one spire. The town, which had a population of



4,145 in 1921, contains a sawmill, a pulp mill, one foundry and farm implements factory. The Canadian National Railway passes through the town.

**Government wharves.**—Montmagny wharf, 209 feet long, is situated on the western entrance point of rivière du Sud, and has a depth of water of 6 feet at its outer end at low water springs.

Another Government wharf is situated about one third mile above Montmagny wharf, on the southwest side of rivière du Sud, just below the falls. It has a mean length of 438 feet and its outer end dries at low tide.

The channel from Montmagny wharf and basin, through St. Thomas bank to the river St. Lawrence trends northwestward in one bend, and is marked by buoys. It nearly dries at low water.

**Bank.**—A bank which dries at low water extends a quarter of a mile off cape St. Ignace, and continues along the shore to the southwestward, attaining a distance of  $1\frac{1}{2}$  miles off shore at half a mile eastward of the entrance of rivière du Sud.

The high water bank near Montmagny is receding, and each year more is broken away by ice and sea. The low water line, however, is not changing much.

**Leading lights.**—A white open framework tower 26 feet high, at the outer end of Montmagny pier, at the western entrance of the rivière du Sud, exhibits at 26 feet above high water, a *fixed red* light, that should be seen from a distance of 3 miles in clear weather. A white framework tower, 36 feet high, situated S.  $\frac{1}{4}$  W., 657 yards from the preceding light, exhibits at 44 feet above high water, a *fixed red* light, that should be seen, through a small arc on each side of the leading line, from a distance of 3 miles in clear weather. These lights are leading lights for entering the harbour only, which should not be attempted without local knowledge.

**The shore** from Montmagny pier continues westward for 3 miles to St. Thomas point, which is low.



**ST. ROCH SHOALS** join those of St. Anne and continue westward for a considerable distance from the shore from St. Roch to Montmagny.

### ST. ROCH TRAVERSE TO CRANE ISLAND

**St. Roch traverse**, is that part of the South channel lying between the shoals of Ste. Anne and St. Roch to the eastward and Middle ground with its shoals to the westward. It is  $2\frac{1}{2}$  cables wide at its narrowest part between the 5-fathom banks on either side.

**Middle ground**, is the name given to the wedge-shaped rocky shoal which forms the division between Middle channel and St. Roch traverse. There are depths on it of only 6 feet.

**Tides and tidal streams.**—The time of high and low water in the lower Traverse is practically the same as at *pte. aux Orignaux* (*see page 144.*)

The flood stream begins 3h. 57m. after low water, and the ebb begins 3h. 35m. after high water at Father point. In the Upper traverse the flood commences 5m. to 13m., and the ebb 22m. earlier than in the Lower traverse.

The Traverse may be considered the crucial point on the lower St. Lawrence, as the tidal streams here attain their greatest strength. In the Lower traverse the flood stream runs 5h. 45m. and the ebb stream 6h. 45m. In the Upper traverse the flood stream runs 5h. 25m. and the ebb stream 7h. 0m.

The tidal streams in St. Roch traverse were investigated by the Tidal and Current Survey during the season of 1900, and comparisons were made with the tide as observed simultaneously at Quebec and Father point. The time at which these streams begin, proves to be more constant in its relation to the tide at Father point, than to the tide at Quebec.

The Tide Tables published annually by the Hydrographic Survey of the Department of Marine and Fisheries give the time of the turn of the current in the Lower traverse for every tide during the season of navigation. (*See page lvii.*)



The following features are noteworthy:—

(1) There is practically no variation from month to month in the time at which the current turns. The monthly averages are well within 5m. of the general average.

(2.) During the course of the month, the only appreciable variation from the average is in the turn after low water. This occurs in two ways: Firstly, a variation which ranges in the Lower traverse from 3h. 53m. at the springs to 4h. 07m. at the neaps; the general average being 3h. 57m. Secondly, for a few days when the moon is in high declination, north or south of the equator, the turn at low water may occur 15m. earlier or later than the average. At high water, this variation is scarcely appreciable.

As the flood stream begins much earlier in North channel than in South, the first of the stream therefore comes from the northward, setting in a S. by W.  $\frac{1}{4}$  W. direction upon Ste. Anne and St. Roch shoals, but inclining gradually more to the westward, until at a quarter-flood it sets S.W. fairly through St. Roch traverse. After half-flood it sets about S.W. by W. and towards the end of the tide still more to the westward; perhaps because, the time of high water being somewhat earlier in North channel, the water has begun to fall there before the flood has quite ceased in South channel.

The ebb stream sets nearly in the contrary direction to the flood; the first of the ebb setting off from Ste. Anne and St. Roch shoals through the channels westward of Middle ground, and north-northeastward over the tail of that shoal.

Above the Pillars both streams set fairly up and down the river.

**Rates.**—In St. Roch traverse below about a mile above Upper traverse lighthouse, the rate of the ebb is 7 to 8 knots. and that of the flood 6 to  $7\frac{1}{2}$  knots. The rates of the flood and ebb streams decrease gradually westward until about  $1\frac{1}{2}$  miles below Channel patch, where the ebb stream attains a rate of  $4\frac{1}{2}$  knots at springs; the rate of this stream increases to  $5\frac{1}{4}$  knots southward of the Pillars, and decreases to 3 knots at Crane island, while the flood stream runs about one knot an hour less at the respective localities.



**LIGHTS.**—The following lights and buoys in South channel, from the northeastern entrance of St. Roch traverse southwestward, in order of approach from seaward, are:—

**Middle ground light-buoy.**—The northeastern end of Middle ground is marked by a red cylindrical buoy, No. 56B, surmounted by a pyramidal steel frame supporting a lantern. The light, which is about 10 feet above the water, is *occulting red*, and should be visible for a distance of about 8 miles. The buoy is moored in 31 feet of water.

**Buoy.**—A red conical steel buoy, No. 56½B, is moored on the east side of Middle ground on the edge of the 5-fathom line, with Upper traverse light bearing S.E.  $\frac{3}{8}$  S. distant 3¼ miles.

**Lower traverse light-vessel.**—A two-masted iron ship, with hull and bulwarks painted red, and “Lower Traverse No. 20” in white letters on each topside, now marks the lower entrance to St. Roch traverse.

This light-vessel, whilst in position, carries a red ball on stay between masts. The vessel is moored in 7½ fathoms on the south side of St. Roch traverse at the lower end, in a position N.E.  $\frac{1}{4}$  E., distant  $2\frac{4}{10}$  miles from Upper traverse lighthouse, and distant 9 cables northeast of the ruins of the old lighthouse pier. She exhibits, on the main mast, an *occulting white* light as follows:—Visible 18 seconds, eclipsed 3 seconds, visible 6 seconds, eclipsed 3 seconds. The light is 42 feet high and should be visible 11 miles. If for any reason she is not in position, the ball will be lowered and at night the occulting white light will not be shown.

**Fog signals.—Steam whistle.**—During the continuance of thick weather a steam fog whistle on the ship will give *two blasts* of *four seconds* duration every *minute*, thus: blast *four seconds*, silent *four seconds*; blast *four seconds*, silent *forty-eight seconds*.

**Submarine fog bell.**—A submarine fog bell strikes seven times every *twenty-two seconds*, thus: *seven strokes* with intervals of *two seconds* between the strokes, followed by silence of *ten seconds*.



**St. Roch traverse Middle ground light buoy.**—The southeastern edge of Middle ground is marked by a red cylindrical buoy, No. 58B. It bears W.  $\frac{1}{2}$  N.,  $4\frac{1}{4}$  cables from Lower traverse light vessel. This buoy is surmounted by a pyramidal steel frame which supports a lantern, and exhibits an *occulting red light*.

**Light-buoy.**—In order to mark the vicinity of the ruins of the Lower traverse pier (which are visible at low water), a black cylindrical light-buoy, No. 57B, is moored N.E.  $\frac{1}{4}$  N., distant half a cable from the old pier. This buoy shows an *occulting white light*.

**Light-buoy.**—To mark the westerly edge of St. Roch shoals, is moored, on the edge of the 5-fathom bank, a steel light-buoy painted black, No. 59B. It bears W. by S.,  $2\frac{3}{4}$  cables from Upper traverse lighthouse, and exhibits an *occulting white light*.

**Light-buoy.**—The southwestern end of Middle ground is marked by a red cylindrical light-buoy, No. 60B, moored on the edge of the 5-fathom contour, N.W.  $\frac{1}{4}$  W., distant  $3\frac{3}{4}$  cables from Upper traverse lighthouse. The buoy exhibits an *occulting red light*.

**LIGHT.—Upper traverse lighthouse.**—(Lat.  $47^{\circ}-19'-48''$  N., Long.  $70^{\circ}-16'-15''$  W.).—A square white building with a red roof, above which rises a square tower with a red lantern is built on a black cribwork pier on a concrete base on the northwestern edge of St. Roch shoal, with St. Roch church bearing S.E.  $\frac{3}{4}$  E., distant 4 miles.

The height of the lighthouse is 42 feet and it exhibits at a height of 47 feet above high water a *flashing white light every five seconds*, thus: flash *one second*, eclipse *four seconds*. In clear weather the light is visible a distance of 12 miles from all points of approach.

**Fog signal.**—A bell, sounded by hand, answers vessels' signals, during thick weather, fog or snow.

**St. Roch shoals buoys.**—A light-buoy, painted black, No. 61B, is moored S.W.  $3\frac{3}{10}$  miles from Upper traverse lighthouse, close westward of the edge of St. Roch shoal. It shows a *white occulting light*.

Variation  $20^{\circ} 30'$  W.



A black can buoy, No. 63B, is also moored westward of St. Roch shoal, with St. Jean Port Joli church bearing S. by E. distant  $2\frac{7}{10}$  miles.

**Shoal spots.**—A shoal, with 28 feet of water over it at low water, lies S.W. by W. and distant  $4\frac{1}{2}$  cables from Upper traverse lighthouse. This spot lies a cable inside the line of the lighthouse and buoy 61B, and less than half a cable eastward of the usual track of vessels.

A 5-fathom spot, lies S.W.  $\frac{7}{8}$  W., and distant  $1\frac{3}{10}$  miles from the lighthouse. This spot is just on the western edge of the usual track of vessels.

Another spot, with 31 feet of water on it, lies S.W.  $\frac{3}{4}$  W., and distant 1.7 miles from the lighthouse. It lies a cable westward of the usual track of vessels.

A patch, 6 cables long and narrow, with 24 feet least water on it, lies S.W.  $\frac{1}{4}$  S., distant  $4\frac{1}{2}$  miles from Upper traverse lighthouse. The western edge of the shoal is about a cable eastward of the track of vessels.

A 5-fathom spot, lies N.E. by E. distant  $3\frac{3}{10}$  miles from Stone Pillar light, and  $1\frac{1}{2}$  cables eastward of the track of vessels.

**CHANNEL PATCH** is a narrow ridge extending about a mile S.W.  $\frac{7}{8}$  S., with depths of 21 to 26 feet water over it. From the shoalest part of the patch, which is about 2 cables from the southwestern end, Stone Pillar bears S.W.  $\frac{7}{8}$  W., distant  $2\frac{1}{2}$  miles. The passage northwestward of Channel patch should not be used for navigation.

**Light-buoy.**—On the northern edge of the patch, moored in  $4\frac{1}{2}$  fathoms, is a red cylindrical buoy No. 62B, which exhibits a *red occulting* light.

**Light-and-bell buoy.**—On the southeast end of Channel patch is moored a light-and-bell buoy, painted red, No. 64B, and shows an *occulting red* light.

**Wreck buoy.**—A light-buoy, painted green, and showing a *fixed white* light, and placed on the channel side, indicates position of wreck of the S.S. *Canadian Recruit*. The wreck lies one half mile east of Channel patch light-and-bell buoy No. 64B.



**The channel**, abreast of Channel patch, narrows to a width of about a quarter mile. On the eastern side are numerous spots of 16 to 18 feet, close inside the 5-fathom contour.

**A shoal**, with 29 feet of water on it lies N.E.  $\frac{1}{2}$  E., distant 2 miles from Algernon rock light. It is about one half cable distant from the usual track of vessels.

**Port Joli shoals.**—The bottom off Port Joli is very irregular, there being several 16-foot spots, immediately inside the 5-fathom contour. These shallow spots, which extend for a distance of nearly 3 miles, are known as Port Joli shoals.

**Light-buoy.**—A black cylindrical light-buoy, No. 65B, is moored on the edge of the 5-fathom contour and on the western side of two 17-foot spots with Stone Pillar light bearing west, distant 11 cables. The buoy exhibits an *occulting white* light.

**Light-buoy.**—A red conical light-buoy, No. 64 $\frac{1}{4}$ B, is moored in mid-channel with Stone Pillar light bearing W.  $\frac{1}{4}$  N. distant 7 $\frac{1}{2}$  cables. The buoy exhibits an *occulting red* light.

**Light-buoy.**—A red conical light-buoy, No. 64 $\frac{3}{4}$ B, is moored on the edge of a 27-foot spot with Stone Pillar light bearing N.  $\frac{1}{4}$  W. distant 7 $\frac{1}{4}$  cables. The buoy exhibits an *occulting red* light.

**Light-buoy.**—A black cylindrical buoy, No. 65 $\frac{1}{2}$ B, is moored on the edge of a 27 foot spot in about mid-channel with Stone Pillar light bearing N. by E.  $\frac{3}{8}$  E. distant 11 $\frac{1}{4}$  cables. This buoy exhibits an *occulting white* light.

**Buoy.**—A black steel can buoy, No. 65 $\frac{1}{4}$ B, is moored on the edge of a 5-fathom bank with Stone Pillar light bearing N. by W.  $\frac{1}{4}$  W. distant 8 $\frac{1}{2}$  cables.

**SEAL ISLANDS**, situated in the middle of the river and about N.W.  $\frac{1}{2}$  N., 6 miles from Port Joli, are three islets, each about 6 feet high, and the highest part of a long slate reef which is covered at high water. There are three houses on the eastern islet, with a cross and two high bushes near them. On the western islet is a conspicuous spruce tree surrounded by low bushes. Rocher de la Mare, on the reef, and about 8 cables northeastward of the eastern islet, is 7 feet high.



**The PILLARS** are two small and steep islets of greywacke rock, named Wood Pillar and Stone Pillar.

**Wood Pillar**, N.W.  $\frac{5}{8}$  W., 4 miles from Port Joli, is  $1\frac{1}{2}$  cables long and 81 feet above high water. Middle rock, E. by N.,  $4\frac{1}{2}$  cables from Wood Pillar, to which it is connected by a shoal, dries 17 feet at low water. A shoal extends from the north-eastern point of Goose island to Wood Pillar, and continues  $2\frac{1}{2}$  miles farther northeastward.

**Stone Pillar**, E.  $\frac{3}{8}$  S.,  $1\frac{1}{2}$  miles from Wood Pillar, is quite bare.

**LIGHT** (Lat.  $47^{\circ}-12'-21''$  N., Long.  $70^{\circ}-21'-36''$  W.).—A circular, grey stone lighthouse, 52 feet high, situated about 100 yards from the southern point of Stone Pillar, exhibits from a height of 83 feet above high water, a *flashing white* light, showing *one flash every 7 seconds*, thus; the flash increases in intensity during its  $3\frac{1}{2}$  seconds duration then is totally eclipsed for  $3\frac{1}{2}$  seconds. The light is visible a distance of 14 miles in clear weather. There is a white dwelling with brown roof near the lighthouse.

**Algernon rock.—Shoals.**—Algernon rock, formerly called South rock, which covers at half flood, is steep-to on its north-western and southeastern sides. Shoal water extends  $1\frac{1}{2}$  cables northeastward of the rock to a depth of 17 feet. A rock, with a depth of 18 feet over it, is situated N.E.  $\frac{3}{4}$  E. distant  $3\frac{1}{2}$  cables, and a shoal with 26 feet water, N.E. by E., three quarters of a mile from Algernon rock lighthouse. Shoal water also extends nearly a quarter mile southwestward of the rock. Another spot, with 28 feet over it, lies N.E.  $\frac{3}{4}$  N. distant 3 cables, and a 19-foot spot lies S.  $\frac{1}{4}$  W., distant 7 cables from the light, and  $1\frac{1}{2}$  cables from the track of vessels. Shallow water extends  $2\frac{1}{2}$  cables northwest of this spot. A shoal spot with a least depth of 26 feet at low water lies S.E.  $\frac{3}{4}$  S. and distant 4 cables from Algernon rock lighthouse. A 28-foot spot lies S.S.E.  $\frac{3}{4}$  E., distant  $1\frac{1}{4}$  cables from the same light.



**LIGHT.**—A square, white lighthouse with a red roof, 32 feet high, built on a whitewashed concrete pier on Algernon rock, exhibits, at a height of 36 feet above high water, a *fixed white* light, which should be seen from a distance of 6 miles in clear weather.

**GOOSE ISLAND REEF**,  $2\frac{3}{10}$  miles southwestward of Stone Pillar, consists of a ledge of rock,  $1\frac{7}{10}$  miles in length, and trending S.W. by W.  $\frac{1}{4}$  W. Several small heads of the reef are above water at all times of tide, and the highest part, a rugged conical mound, 29 feet high, is situated near the western part of the reef. An isolated rock, which dries 2 feet at low water lies N.E. by E., nearly half a mile from the northeastern end of the reef, and is connected with the reef by shoal water. A 3-fathom patch lies 2 cables southeastward of this rock. There are five other shoal spots between Stone Pillar and Goose island reef, with depths of 11 to 18 feet over them. Several small detached rocks lie off the southeastern side of Goose island reef, but they do not extend more than one cable from it. A rock with a depth of 7 feet is situated midway between the southwestern end of Goose island reef and Goose island.

A long spit, with depths of 9 to 17 feet over it, extends S.W.  $\frac{7}{8}$  W., nearly  $1\frac{1}{2}$  miles from the southwestern end of Goose island reef; and the deepest water in the channel lies 4 cables southeastward of Goose island reef and spit.

**Leading mark.**—Crane island pier light and Beaujeu beacon light in line, S.W. by W.  $\frac{1}{2}$  W., lead southeastward of this spit. (*See page 193*).

**Light-buoy.**—A red cylindrical buoy, No. 66B, is moored in 5 fathoms of water in a position S.S.W., distant  $4\frac{1}{2}$  cables from the highest islet (29 feet) on Goose island reef, and exhibits an *occulting red* light.

**GOOSE ISLAND**, the main part of which is  $2\frac{8}{10}$  miles long east-northeast and west-southwest, with a greatest width of  $6\frac{1}{2}$  cables, is wooded, hilly, and divided by a valley into north and south ranges; near its southwestern extreme are two round summits, 203 feet high. A chain of hillocks, that from a distance appear like islands, and on which are several conspicuous houses with barns near them, extends southwestward from the north-



ern range. The northern range, which is 168 feet high, falls in cliffy banks, and at its northeastern end is a large white barn, which is very conspicuous from the northward. A large red sugarloaf beacon stands on a small detached islet close southward of the northeastern end of Goose island.

Goose island meadows (*battures de l'île aux Oies*) extend  $4\frac{1}{2}$  miles southwestward from the southwest end of Goose island and connect it with Crane island. The meadows are only just above high water ordinary springs, and are intersected by numerous streams that have cut deep channels in the mud, and are impassable from half flood to half ebb.

These meadows yield a large quantity of coarse hay, which is divided among the inhabitants of Goose and Crane islands, and is shipped to Quebec and to the villages on the shores of the St. Lawrence. After the harvest the meadows are covered with haystacks, which are erected on frame-work to prevent the loss that would otherwise be occasioned by exceptionally high tides. These from a distance resemble small houses.

Several rocks lie off the southern coast of Goose island, all of which cover at high water, except *rocher aux Grêlons*, which is 4 feet above high water and situated about S.S.W.  $\frac{3}{4}$  W., half a mile from the highest part of the island and on the outer edge of the reef that dries at low water, and Hospital rock, which is 10 feet high, and situated W.  $\frac{7}{8}$  S., half a mile from *rocher aux Grêlons*. Chapel rock, 24 feet high, is on the meadows at N.W. by W.,  $4\frac{1}{2}$  cables from Hospital rock, and is named from a church which formerly stood there, the foundations of which still exist. A white diamond-shaped beacon, about 30 feet high, stands on the southern coast of Goose island meadows at a little more than 2 miles westward of Hospital rock.

In case of necessity, for instance to winter safely from the ice, vessels could be beached in that part of the bay between Goose and Crane islands, which is included between distances of half a mile and 2 miles southwestward of Hospital rock. The bottom at this place is mud, dry at low water. There are but few places fit for this purpose on the St. Lawrence.

**HOSPITAL ROCK LEADING LIGHTS.**—The following leading lights in line bearing N.E. (astern passing up river), lead through the centre of Beaujeu west narrows, in 30 feet of



water, at a distance of 250 feet southeastward of the red light-and-bell-buoy, No. 70B.

The front light (*Lat.*  $47^{\circ}-08'-00''$  N., *Long.*  $70^{\circ}-27'-54''$  W.) *fixed white*, elevated 28 feet above high water and visible from a distance of 9 miles on the leading line, is situated on Hospital rock. It is exhibited from a square wooden building, surmounted by an octagonal wooden lantern, 22 feet in height, the whole painted white. The back light, *fixed white*, elevated 65 feet above high water and visible from a distance of 10 miles on the leading line, is situated on Goose island at a distance of 5,960 feet N.E. from the front light. It is exhibited from a steel frame-work tower with sloping sides, painted brown, surmounted by a white wooden watch room and red-roofed octagonal lantern the whole structure being 64 feet in height. The upper portion of the frame-work facing the channel is covered with wooden slats painted white, with a red vertical stripe facing alignment and serves as a day mark.

**Dunscomb rock**, S.  $\frac{3}{8}$  W., 8 cables from Hospital rock, has  $2\frac{1}{4}$  fathoms water over it, with 5 fathoms close to. From the rock the summit of cape Tourmente is in line with the summit of Onion island, bearing W. by N.  $\frac{1}{4}$  N., and the northwestern side of Wood Pillar is in line with the southeastern extreme of the rocks on the northeast end of Goose island.

**Shoal.**—From Dunscomb rock the edge of the shoal water extending off Goose island meadows trends about S.W. by W. to about a quarter of a mile off Macpherson point, the north-eastern point of Crane island.

**Buoy.**—A red conical buoy, No. 68B, is moored on the edge of this shoal at N.E. by E.  $\frac{1}{2}$  E.,  $1\frac{3}{4}$  miles from Macpherson point.

**CRANE ISLAND** is about  $3\frac{3}{10}$  miles long east-northeast and west-southwest, 7 cables wide, and is generally flat in outline, its greatest height being 132 feet near its southwestern end. The lower parts of the land are cultivated, but the summit and southwestern slope are wooded. A house, and the barns near it, at the northeastern extreme of the island, are conspicuous. There are numerous beacons on its southern side; on its north-



western side there is an almost continuous line of houses, with St. Antoine church, built of brick and surmounted by a spire, in the middle of them. The inhabitants of the island about 500 in number, all live on its northwestern side, and are chiefly engaged in farming.

**Submarine telegraph cable.**—A submarine telegraph cable has been laid in a direction nearly due south from the western side of Crane island wharf, across the South channel, to a position on the southern bank of the St. Lawrence river, situated at a distance of  $1\frac{8}{10}$  miles E.  $\frac{1}{2}$  N. from Montmagny wharf light. A sign board on the pier warns vessels against anchoring in the vicinity of the cable.

**Government wharves.**—Two wharves have been constructed on the island, one on the southern and one on the northwestern sides. The southern wharf has a length of 645 feet and nearly dries at its outer end at low water springs. It is provided with a slip. Schooners and small craft find some shelter beside the wharf.

**Semaphore.**—On the end of this wharf a semaphore has been established, giving the depths in Beaujeu and St. Thomas channels showing variations of 6 inches in depth between 26 and 35 feet.

The wharf on the northwestern side of the island is located  $1\frac{6}{10}$  miles from the western end. It is 780 feet long and there is a depth of 14 feet at its outer end at high water neaps. It is provided with a slip. This pier was built to facilitate the shipping of the farm produce from the island.

**LIGHT** (Lat.  $47^{\circ}-02'-47''$  N., Long.  $70^{\circ}-32'-50''$  W.).—A tower, situated between the old tower and the outer end of the pier, has been erected on the Government pier. From it is shown a *white light, occulting every ten seconds*, thus: *light, five seconds; eclipse, five seconds.*

The light, which is elevated 89 feet above high water, and is visible from a distance of 15 miles, is exhibited from a steel frame-work tower with sloping sides, painted brown, surmounted by a white wooden watch room and red octagonal lantern, the whole structure being 90 feet in height.



**Signal station.**—There is a signal and telephone station located in the old octagonal tower, which has been cut down to a single storey in height. It is painted light brown with red pyramidal roof. (See page xliv.)

**BEAUJEU BANK**, the northern end of which lies S.S.W.  $\frac{1}{4}$  W.,  $2\frac{2}{10}$  miles nearly from Hospital rock, is a narrow shoal of sand and gravel over slate, extending S.W. by W.  $\frac{1}{8}$  W. about  $2\frac{1}{2}$  miles, and there are only 10 feet at low water over some parts of it. Its southwestern end approaches to 5 cables from Crane island.

**Light-and-bell buoy.**—A cylindrical light-and-bell buoy No. 67B, painted black and showing an *occulting white* light, is moored off the northeastern extreme of Beaujeu bank, with Crane island light bearing S.W. by W.  $\frac{3}{4}$  W., distant  $4\frac{8}{10}$  miles.

**BEAUJEU CHANNEL**, between Beaujeu bank and the shoals off Goose island meadows, is about half a mile wide and has depths of 6 to 9 fathoms.

**BEAUJEU WEST NARROWS**, between the southwestern end of Beaujeu bank and the shoals off Crane island, have now been dredged to a depth of 30 feet at extreme low water. The width of the dredged area is 1,200 feet, 500 feet northwestward and 700 feet southeastward of Hospital rock leading line.

**Light-buoy.**—A black cylindrical light-buoy, No. 69B, is moored in 30 feet of water, in a position 3 cables E.S.E. from Beaujeu channel beacon. This buoy which marks the eastern side of the dredged channel, shows a *fixed white* light.

**Light-and-bell buoy.**—A cylindrical light-and-bell buoy, painted red, No. 70B, is moored to show the western edge of the dredged channel, in a position from which Crane island lighthouse bears W. by S.  $\frac{3}{4}$  S., distant  $1\frac{8}{10}$  miles. The bell is rung by the action of the waves and the buoy exhibits an *occulting red* light, which should be visible from a distance of 8 miles.

**Tides.**—It is high water in the Beaujeu channel 1h. 10m., and low water 1h. 43m. before Quebec. Springs rise 19 feet, neaps  $13\frac{1}{2}$  feet. (For height of tide at various stages, see pages 206 and 216.) Tables showing the time of high and low water in Beaujeu channel are included in the annual tide tables.

Variation  $20^{\circ}$   $20'$  W.



**Beacons.—Prohibited anchorage.**—On Macpherson point are two white sugarloaf beacons, bearing N.E. and S.W. from each other, and a similar pair of beacons, on a similar bearing, are situated on the coast of the island at about 9 cables farther southwestward. These pairs of beacons, each in line, mark a space within which anchorage is prohibited.

**Wreck buoy.**—A light-buoy, painted green, and showing an *occulting white* light, is moored in 8 fathoms of water, about 150 yards north of the wreck of the steamer *Montmagny*, lying three quarters of a mile E. by N.  $\frac{1}{2}$  N. from Beaujeu channel beacon light and pier.

**LIGHT** (*Lat. 47°-04'-10" N., Long. 70°-30'-57" W.*).—**Beaujeu beacon.**—Northwest of the narrows of Beaujeu channel and with Crane island pier light-tower bearing S.W. by W.  $\frac{1}{2}$  W. is situated a whitewashed concrete pier, which is surmounted by a red gas holder and pyramidal frame. This carries, at a height of 27 feet above high water, an unwatched gas light, *occulting white*, which should be visible in clear weather from a distance of 10 miles.

**Leading line.**—This light in line with Crane island pier light, bearing S.W. by W.  $\frac{1}{2}$  W., leads from the lower end of Goose island reef, through Beaujeu channel, to the intersection of the alignment of Hospital rock leading lights, which lead through West narrows.

**Shoals.**—Southwestward of the diamond-shaped beacons, Crane island shoals extend 3 cables off shore. This distance decreases to  $1\frac{1}{2}$  cables at Crane island light.

**Channel southeastward of Beaujeu bank.**—The depth in this channel is irregular, varying from 5 fathoms to 17 feet. One rocky patch of 17 feet is difficult to avoid, so that, as the channel is not buoyed, only that depth could be depended on to be carried through at low water springs, although perhaps with local knowledge a least depth of  $3\frac{1}{4}$  fathoms might be obtained. The channel is half to three quarters of a mile wide.

**Light-buoy.**—A light-buoy, painted black, No. 69 $\frac{1}{2}$ B, is moored northward of a 16-foot shoal on the southern side of the channel, with Crane island pier light-tower bearing N. by E.  $\frac{3}{4}$  E., distant 7 cables. Two sugarloaf-shaped beacons, situated at the western end of Crane island, are cross marks for this buoy.



**St. Thomas bank** extends rather more than 2 miles off shore at the village of St. Thomas; it is sand, mud, and stones, and dries at low water nearly to its northern edge, which is very steep. Boulders are visible at low water beyond the north-eastern extreme of that part of the bank which dries.

**Clearing marks.**—The southeastern end of Bellechasse island and St. Vallier point in line leads northward of St. Thomas bank; therefore the whole of the island should not be opened northward of the point; this mark can seldom be seen. The apparent northern extreme of the range of hills on the southern shore just open southward of Crane island lighthouse, bearing E. by N.  $\frac{3}{4}$  N., leads northward of St. Thomas bank in the deepest water.

**DIRECTIONS FROM NORTHEASTERN ENTRANCE OF ST. ROCH TRAVERSE TO CRANE ISLAND.** (*Continued from page 168.*) In bad and thick weather consideration is necessary as to running through South channel, especially at night, and in ships of much draught. It is generally desirable for steam vessels coming up the river to pass St. Roch traverse with the flood, for the ebb is so rapid between the buoys, that except in a vessel with great speed, little progress will be made against it.

Approaching St. Roch traverse from the northeastward, having taken the channel south of Hare island, and with Grande island light bearing E.S.E., distant about one mile, a course S.W. by W.  $\frac{7}{8}$  W., for  $18\frac{1}{2}$  miles will lead to a position about 5 cables S.E. of Middle ground light-buoy No. 56B. With adverse tides local vessels prefer to keep along the edge of the 5-fathom contour until abreast of pte. aux Orignaux, in which case, having passed pte. aux Orignaux, care must be taken to keep cap au Diable well open north of pte. aux Orignaux lighthouse, or if at night, not to bring the light to bear anything north of E. by N.  $\frac{1}{8}$  N., in order to avoid the shoals off Ouelle point.

In the above position off Middle ground light-buoy, No. 56B, Lower traverse light-vessel should be seen in line with Upper traverse light on the bearing S.W. (The possibility of the light-vessel being slightly out of position must be borne in mind when considering this bearing). In clear weather Stone Pillar revolving light may be seen in line with Upper traverse flashing



light, practically on the same bearing. Either of these lines lead into St. Roch traverse from seaward.

When about one mile below Lower traverse light-vessel, steer so as to pass mid-distance between it on the port, and St. Roch traverse light-buoy, No. 58B, on the starboard hand,  $1\frac{1}{2}$  cables northwestward of the ruin of Lower traverse pier (marked by black light-buoy, No. 57B), and mid-distance, 2 cables between Upper traverse lighthouse, and the red light-buoy, No. 60B. Thence steer about S.W.  $\frac{1}{4}$  S., to leave black light-buoy, No. 61B and black can buoy No. 63B on St. Roch shoals, on the port hand, and Channel patch, marked by the red light-buoy No. 62B and red light-and-bell buoy No. 64B, on the starboard hand.

If proceeding seaward from the above position off Middle ground buoy, No. 56B, the one course N.E. by E.,  $25\frac{2}{10}$  miles, will lead to  $1\frac{1}{2}$  miles S.E. of cape Salmon, leaving Morin shoal 5 cables on the port hand. This course leads close to the shoalest portion,  $5\frac{1}{2}$  fathoms, off English bank.

**CAUTION.—The courses alone must not be trusted, for the set of tidal streams cannot be depended upon. Leads, buoys and lights are the best guides.** The first of the flood streams may be expected to set southward toward St. Roch shoals, and the ebb in the contrary direction.

From eastward of Channel patch light-and-bell buoy, No. 64B, steer to pass 2 cables northwestward of St. Jean Port Joli black light-buoy No. 65B, and then  $2\frac{1}{2}$  cables southeastward of Algernon rock. After passing Algernon rock keep Crane island well open southward of Goose island reef, until Algernon rock bears N.N.E.  $\frac{1}{2}$  E., distant 8 cables. From this position Crane island pier light-tower and Beaujeu beacon should be brought into line, bearing S.W. by W.  $\frac{1}{2}$  W. Their alignment, which leads through Beaujeu channel to the foot of Beaujeu west narrows, passes half a mile southeastward of Goose island reef, and 2 cables southeastward of red light-buoy No. 66B. Black light-and-bell buoy, No. 67B, marking the northeastern end of Beaujeu bank, is passed at a distance of 2 cables to port, and the red conical buoy No. 68B, off Goose island meadows, 3 cables to starboard. This line should be held until nearing the Beaujeu beacon, when Hospital rock leading lights will come into line astern, bearing N.E., and must be kept on astern leading through



Beaujeu west narrows between light-buoy No. 69B and light-and-bell buoy No. 70B. When the southwestern prohibited anchorage beacons are in line, or Crane island pier lighthouse bears W. by S.  $\frac{1}{4}$  S., steer to pass a quarter mile southward of that lighthouse.

In Beaujeu channel in daylight, if for any reason the marks ahead cannot be distinguished, when Hospital rock lighthouse bears about N.W. by N., alter course to starboard gradually so that Stone Pillar lighthouse is brought just open southward of the southern extreme of the highest part of Goose island reef, bearing N.E. by E., which mark on astern will lead through the fairway until the range marks ahead are picked up. (*For continuation see page 214.*)

**Anchorage in St. Roch traverse.**—There is anchorage off Ste. Anne shoals in 6 fathoms at low water up to one mile from Lower traverse light-vessel, where the ground is better, and the tidal stream is less than on the tail of Middle ground. However, the latter is the better position for a sailing vessel for weighing with the first of the flood in northerly winds. Anchorage has been obtained for a tide, in fine weather, on the edge of St. Roch shoals, between traverse lighthouses, but this position is not recommended, for the ebb stream runs there at the rate of 8 knots, and the ground is not to be depended on. Therefore, if the anchor once started it would be difficult to bring the ship up again, and there would be great danger of losing the anchor. In a sailing vessel, should the wind fail, or the flood be done, it is advisable to run down below Lower traverse light, if an anchorage about 2 miles above Upper traverse lighthouse cannot be gained.

Anchorage off St. Roch shoals is indifferent until above St. Jean Port Joli church, but along the edge of the bank off the southern shore, from southeastward of the Pillars to Crane island, the holding ground is a stiff clay, and so good that it is sometimes difficult to weigh an anchor. There is excellent anchorage in westerly winds off Crane island at one mile above Beaujeu bank in 6 fathoms at low water, and there is equally good anchorage with easterly winds under the western end of the island in 5 fathoms. Outward-bound sailing vessels meeting a strong easterly wind anywhere above Upper traverse lighthouse should run back to this anchorage.

Variation 20° 30' W.



## CHAPTER XXII

### SOUTH CHANNEL, ABOVE CRANE ISLAND

SOUTH SHORE, FROM ST. THOMAS POINT TO POINTE LÉVIS

(Continued from page 180.)

**Wye rock**, N. by E. 7 cables from St. Thomas point, is about 2 cables long, east-northeast and west-southwest, and half a cable broad, with a depth of one foot over it at low water. It is separated from St. Thomas bank by a channel nearly half a mile wide, but, with depths greater than 3 fathoms, only one cable wide.

**Light-buoy**.—A black cylindrical light-buoy, No. 79B, is moored in  $5\frac{1}{2}$  fathoms northwestward of Wye rock, with St. Thomas point bearing S.  $\frac{1}{2}$  W., distant 8 cables. This buoy exhibits a *white* light *occulted* at short intervals.

**Leading marks**.—The apparent northern extreme of the range of hills on the southern shore just open southward of Crane island lighthouse, E. by N.  $\frac{3}{4}$  N., leads in the deepest water in South channel, northward of Wye rock and south of Empress shoal (see north side of channel).

**The shore** from St. Thomas point trends W. by S.  $\frac{5}{8}$  S. for  $4\frac{1}{2}$  miles, and then turns northwestward half a mile to Berthier East point. From this point it continues W. by S.  $\frac{3}{8}$  S.,  $1\frac{1}{2}$  miles to pointe Rouge.

**Trou de Berthier**, half a mile westward of Berthier east point, is a small deep cove dry at low water.

**Berthier village**, which has 961 inhabitants, is situated about a quarter of a mile southward of the trou, and its church has a single spire. There is a large traffic in farm produce here, and a coasting steamer plies daily during the season between Berthier and Quebec. The Canadian National Railway passes about 3 miles inland.

**Government wharf**.—A wharf at pointe Verte, the eastern entrance point of the trou de Berthier, is 566 feet in length and has a depth of 17 feet at its outer end at low water. It is provided with three slips.

Variation  $20^{\circ} 10'$  W.



**Rocks.**—Two rocks,  $1\frac{1}{2}$  cables apart, and with depth of one foot and 6 feet over them, lie 4 cables off shore between Berthier east point and Berthier pier. These rocks are heads of a narrow ledge with depths of 9 to 17 feet over it, running parallel to the shore, and with its northeastern extreme bearing N.  $\frac{1}{4}$  W., 4 cables from Berthier east point. Bellechasse light bearing southward of W. by S.  $\frac{1}{2}$  S. leads northward of the above shoal water.

**Tides and tidal streams.**—It is high water at Berthier, 47 minutes, and low water 1h. 08m. before Quebec. Springs rise  $18\frac{1}{2}$  feet and neaps,  $14\frac{1}{4}$  feet. The flood stream in the offing begins at 0h. 2m. after low water at Quebec, or 1h. 10m. after low water by the shore, and it runs for 5h. 5m. The ebb stream begins at 0h. 18m. after high water at Quebec, or 1h. 5m. after high water by the shore, and it runs for 7h. 20m.

**BELLECHASSE ISLAND.** the eastern end of which bears N.N.W.  $\frac{1}{2}$  W., distant 6 cables from pointe Rouge, comprises three principal and several small rocks joined together at low water. It is 3 cables long, N.E. by E.  $\frac{3}{4}$  E. and S.W. by W.  $\frac{3}{4}$  W., and very narrow. There are not more than 3 fathoms water in the channel between it and the mainland.

**LIGHT** (Lat.  $46^{\circ}-55'-57''$  N., Long.  $70^{\circ}-45'-59''$  W.).—A square white lighthouse, 40 feet high, with a red roof and a dwelling attached, on the eastern summit of Bellechasse island, exhibits at 54 feet above high water, an *occulting white* light showing thus: light, *ten seconds*; eclipse, *seven seconds*, that should be seen from a distance of 12 miles in clear weather.

**Pointed rock**,  $1\frac{1}{4}$  cables northward of the middle of the island, has 6 feet water over it. A rock that dries 2 feet at low water lies one cable southwestward, and a shoal with 12 feet over it lies W. by N.  $\frac{1}{2}$  N., 2 cables from the western end of Bellechasse island.

**Anse de Berthier.**—Pointe St. Vallier lies West  $1\frac{7}{10}$  miles from pointe Rouge, and anse de Berthier, lying between, is about 9 cables deep, but is nearly all dry at low water.

**Pointe St. Vallier**, the end of a wooded bluff 128 feet high, is the first prominent point on the southern shore westward of the traverses.



**Shoal.**—A shoal, with 15 feet water over it, lies N.E. by N., 5 cables from pointe St. Vallier.

**The shore** from pointe St. Vallier trends S.W. by W.  $\frac{3}{4}$  W.,  $2\frac{6}{10}$  miles. It then turns west-northwestward, with two projecting points, for 2 miles to pointe St. Michel.

**St. Vallier village** and church stand on the shore at about 2 miles west-southwestward of pointe St. Vallier. There is a beacon on the shore northward of the church, which in line with the latter is used to place the buoy off Madame reef.

**Government wharf.**—A wharf, now in a badly damaged condition from the effects of a heavy storm, projected from the shore at St. Vallier. Its original length was 614 feet with a depth of water of 2 feet at low water.

**St. Vallier bank** fills the whole bay between pointes St. Vallier and St. Michel, and extends about half a mile outside the line joining these points.

A rock, with 12 feet water on it, lies W. by N.  $\frac{1}{4}$  N.  $1\frac{4}{10}$  miles from pointe St. Vallier, and in the shoalest outer sounding on St. Vallier bank.

**Leading marks.**—The end of the pier at pointe Verte shut in with the southern end of Bellechasse island, bearing E.  $\frac{1}{4}$  S., leads northward, and Beaumont church, open northward of pointe de la Durantaye, bearing about W. by S.  $\frac{3}{4}$  S., leads northwestward of these shoals.

**Pointe St. Michel** is low and reefs of slate extend eastward of it, with shoal water in continuation. There is deep water at 3 cables northward of them.

**St. Michel village** is situated on a picturesque site  $1\frac{1}{2}$  miles westward of the point. In 1921 it had a population of 1,296. It is one of the main produce centres for the Quebec market, and is also a summer resort. A coasting steamer calls here twice daily for the traffic in farm produce from the surrounding country. Its church has a spire. On a wooded bluff, close westward of the village, is the chapel of Notre Dame de Lourdes with a fine spire. The Canadian National Railway passes about 4 miles inland.



**Government wharf.**—A wharf, 1,100 feet long, with a depth of 10 feet at low water at its outer end, extends from the shore near the village. It is provided with a slip.

A channel, 200 feet wide with a depth of 10 feet at low water, is dredged for a distance of 1,300 feet, from the outer end of the pier to deep water. This channel is marked by two pairs of spar buoys, the inner pair being 1,000 feet from the end of the wharf and the outer pair at the outer end of dredged portion. The buoys marking the starboard side of the channel are painted red, and those marking the port side, black.

**The shore** from St. Michel village trends westward 9 cables to pointe de la Durantaye, and thence approximately W. by S.  $\frac{3}{4}$  S.,  $4\frac{1}{4}$  miles to Beaumont church, which has a spire and stands on a cliff. A waterfall runs over the cliff at one mile westward of the church and close to a ruined mill at the base. Westward of this mill the water is deep close to the low water line, which, however, is 2 cables from the high water mark.

**Beaumont reefs** lie off Beaumont and comprise a line of boulders, the eastern end of which dries 4 feet at low water, and is situated about midway between St. Laurent pier on Orleans island, and the high-water line of the southern shore; also numerous boulders extending 4 cables from the shore, but gradually closing pointe de la Durantaye.

**Light-buoy.**—A black cylindrical light-buoy, No. 87B, is moored in about 18 feet of water close northward of the eastern part of the reef, about three quarters of a mile from the south shore, and S.  $\frac{1}{2}$  W., 7 cables from St. Laurent lighthouse, and shows an *occulting white light*.

**Leading mark.**—If the above buoy should not be in position to mark Beaumont reef, care must be taken not to bring St. Joseph de Lauzon church to bear northward of W.  $\frac{3}{4}$  N., and the church should be kept well open of pointe Martinière.

**Pointe Martinière**, about W. by N.  $\frac{5}{8}$  N.,  $4\frac{3}{10}$  miles from Beaumont, is the base of a small wooded hillock. A diamond-shaped beacon stands close to the point.



**The shore** from pointe Martinière trends about W. by N.  $\frac{1}{2}$  N. for  $2\frac{1}{4}$  miles, and then W.S.W. one mile to pointe Lévis.

**Lauzon**, which has 4,966 inhabitants, is situated about a mile below pointe Lévis. St. Joseph church, with a high spire is conspicuous, and a large convent and college, each surmounted by a statue, are situated close to it.

**Bienville village**, within pointe Lévis, contained 1,462 inhabitants in 1921.

**Pointe Lévis shoal**.—There are irregular soundings within the 10-fathom contour which from 2 cables off pointe Martinière trends N.W. by W.  $\frac{3}{4}$  W. for  $1\frac{3}{4}$  miles, when it turns towards pointe Lévis. In a N.E. by E.  $\frac{3}{4}$  E. direction from St. Joseph church there is a depth of 24 feet at half a mile off-shore, and westward of this position shoal water continues gradually closing pointe Lévis. Westward of the shoal, pointe Lévis is steep-to.

**Light-buoy**.—A black cylindrical light-buoy, No. 89B, is moored on the northern edge of pointe Lévis shoal about a quarter mile westward of the Lévis dock landing stage, and shows an *occulting white light*.

**Leading marks**.—A small fall in the land at one mile westward of pointe Durantaye in line with the southern extreme of Orléans island, bearing E.  $\frac{3}{4}$  S., leads northward; and St. John church spire at Quebec in line with the southwestern end of the Immigration offices on Commissioners' wharf, bearing W. by S.  $\frac{1}{4}$  S., also leads northward of this shoal. Owing to the great number of spires showing in Quebec and the extension of buildings on the wharves, this latter line is difficult for a stranger to pick up. (*See also page 214.*)

## **SOUTH CHANNEL, ABOVE CRANE ISLAND**

ISLANDS AND SHOALS FORMING ITS NORTHERN SIDE

(*Continued from page 193.*)

The islands in order westward of Crane island (île aux Grues) are Haystack (île Ronde), Mill (île aux Chevaux), Race (île Longue), Middle, Margaret, Cliff (La Sottise) islands and Grosse isle. The highest is Grosse isle, which rises 214 feet above high water.



Between these islands there are narrow and intricate passes, leading into Middle traverse, with water enough for vessels of large draught. These passes are little used for navigation and the chart is the guide to them.

Westward of Grosse isle are Reaux and Madame islands, of slate rock, low, wooded, and connected by reefs of slate nearly dry at low water. These islands and the reefs of slate rock, thinly covered with sand and mud, which extend from almost all of them, bound South channel on its northern side for nearly 13 miles westward of Crane island.

**Crane island spit**, with less depths than 18 feet, extends W. by S.  $\frac{3}{8}$  S.,  $1\frac{3}{4}$  miles from pointe aux Pins. The shallowest part of the shoal lies about a quarter of a mile from the point, and has 5 feet water over it.

**Buoy.**—The southwest end of the spit is marked by a red conical buoy, No. 78B, moored in 4 fathoms of water in a position with the eastern sides of Crow and Middle islands in line, bearing N.E. by N., and distant  $1\frac{4}{10}$  miles from the latter, and with two beacons on Crane island in line.

**Beacons.**—The eastern of these beacons, painted red, is situated  $1\frac{1}{4}$  cables westward of Crane island wharf; and the western, painted white, one cable farther westward; in line, bearing E.  $\frac{1}{2}$  N., they lead, in not less than 24 feet water, southward of Crane island spit, but, with that depth, only as far westward as the red buoy. These beacons are very close together, and their alignment is not sensitive.

**Note.**—There are numerous beacons in this vicinity which are only used for placing buoys, and are not to be taken as aids to navigators.

**St. Thomas channel.**—This channel was originally dredged to a depth of 30 feet and 1,000 feet wide but at present it has silted in so that the available depth is only 26 feet. It is marked by the following light-buoys, all *occulting red*, on the northwest side, Nos. 72B, 74B, 76B, 78 $\frac{1}{4}$ B; and on the southeast side, Nos. 71B, 73B, 73 $\frac{1}{2}$ B, 75B and 77 B, all *occulting white*. (See page 212.)

Variation 20° 10' W.



**Leading mark.**—The southeastern extreme of Crow island in line with northwestern extreme of Middle island, bearing N.E.  $\frac{1}{2}$  N., leads northwestward of Crane island spit and buoy, in about 19 feet water.

**Bank.**—A narrow bank, having several shoals with 20 to 23 feet water on them, extends west-southwestward from Crane island spit and connects it to the bank extending southwestward from Margaret tail.

**Margaret tail,** extending southwestward  $1\frac{1}{4}$  miles from Margaret and Cliff islands, which are nearly joined at low water, is slate, and some parts of it are awash at low tides.

**Grosse isle quarantine light-buoy.**—A red cylindrical light-buoy, No. 80B, is moored in 20 feet of water in a position with the western point of Cliff island bearing N.N.E., distant  $1\frac{2}{10}$  miles and exhibits an *occulting red* light. This buoy, which is placed to assist vessels calling at the quarantine station at night, has "Quarantine" painted on it in yellow letters.

**Leading mark.**—St. Antoine church on Crane island in line with the southern end of Haystack island, bearing E. by N.  $\frac{1}{2}$  N., leads southward of Margaret tail and the buoy, but in a least depth of 22 feet.

**Empress shoal,** about  $2\frac{1}{4}$  miles long and three quarters of a cable wide, lies on the north side of the ship channel, abreast of St. Thomas point and Wye rock. The least water found on the shoal was  $4\frac{1}{2}$  fathoms near the northeastern end, in a position with St. Thomas point bearing S.  $\frac{1}{4}$  W., distant  $1\frac{1}{4}$  miles. Three buoys described below mark the northern side of the channel.

**Light-buoy.**—A red cylindrical light-buoy, No. 78 $\frac{1}{2}$ B, is moored at the northeast end of Empress shoal. It exhibits an *occulting red* light.



**Light-buoy.**—A red cylindrical light-buoy, No. 82½B, is moored off the southeast end of the middle patch of Empress shoal. It exhibits an *occulting red* light.

**Light-buoy.**—A red cylindrical light-buoy, No. 84B, has been moored off the southwestern extreme end of this patch. This buoy exhibits a *red light occulted* at short intervals.

**Leading mark.**—The apparent northern extreme of the range of hills on the southern shore just open southward of Crane island light-tower leads in the deepest channel south of Empress shoal. This line also gives Wye rock, to the southward, about the same berth.

**Grosse isle patch,** 6 cables long northeast and southwest, is a rocky shoal with 7 feet least water, lying westward of Margaret tail. The channel between Grosse isle patch and Margaret tail is a quarter mile wide, with a depth of 5¼ fathoms in the fairway.

**Buoy.**—A black can buoy, No. 81B, is moored in 4 fathoms water at the northeastern end of the patch.

**Grosse isle rock.—Buoy.**—This rock, with 7 feet water over it, lies nearly 2 cables off the southern side of Grosse isle at E. ¾ N., a quarter of a mile from the western pier. A red conical buoy, No. 82B, is moored on the rock.

**A rock,** with 15 feet water over it, lies westward of Grosse isle patch, and with the outer end of Grosse isle western pier bearing N.E. by N., distant 6 cables.

**GROSSE ISLE** is 1½ miles long by one half mile in width. It is exclusively used as a quarantine station by the Department of Health, the buildings on the island forming the quarantine establishment. The only means of communication with Quebec is by Canadian Government steamers. The hospital, a conspicuous brick building, is a quarter of a mile from the eastern end, and the superintendent's house is immediately behind the flagstaff. The churches visible from South channel are the Episcopal church, a brown building with a low tower, on an eminence immediately northeastward of the western pier, and



the Roman Catholic church, with a small spire, situated near the middle of the southern coast, and visible only from the eastward and westward, being obscured from the southward by a rocky mound in front of it.

**Wireless station.**—There is a Government wireless station at Grosse isle. Call letters are VCD. (*See page xxxviii.*)

**Government wharves.**—There are two piers on the southern coast of Grosse isle, one 3 cables from the western end is 500 feet long giving a depth of 23 feet at its outer end. This pier is used for quarantine purposes only. Each vessel performing quarantine has to land all her passengers not actually labouring under disease, with all their effects, and all or such part of the cargo and other contents as may be necessary to be purified and disinfected. Several buildings of the disinfecting plant are built on the wharf.

Another Government wharf, near the middle of the island, has a length of 350 feet giving a depth of water of  $17\frac{1}{2}$  feet at its outer end at low water springs. It is provided with 3 slips. The wharf is chiefly used for the reception of supplies, the landing of sick passengers and their relatives, and the embarkation of hospital convalescents.

**Directions and leading marks.**—The northwestern end of Two Heads island in line with the western end of Cliff island, bearing N.E.  $\frac{1}{2}$  N., leads northwestward of Margaret tail, and between it and Grosse isle patch until Grosse isle patch buoy bears about North, when round the buoy into the anchorage; or, if proceeding to Quarantine pass, steer northward after passing Grosse isle patch buoy until Crow island is open northward of the rocks of le rocher Rouge, which mark leads northwestward of the shoal off Cliff island.

The Episcopal church at Grosse isle in line with the inner end of the western pier, bearing N.N.E.  $\frac{1}{4}$  E., leads in  $3\frac{1}{4}$  fathoms between the 15-foot rock, westward of Grosse isle patch, and Grosse isle patch; and the summit of Margaret island in line with the northern end of Cliff island, bearing E. by N.  $\frac{1}{2}$  N., leads northward of Grosse isle patch to the quarantine anchorage. A good cross mark for that anchorage is the Episcopal church



just open eastward of the western pier. The northern end of Race island, a little open southward of Margaret island, bearing E. by N.  $\frac{1}{2}$  N., leads in 23 feet southward of Grosse isle patch.

**Quarantine anchorages.**—For information concerning quarantine procedure, refer to pages 53 and 55. All vessels requiring, on instructions from the Quarantine Officer at Father point, to stop at Grosse isle shall, if necessary, anchor in five fathoms outside Grosse isle patch and westward of Margaret tail, which is one of the best anchorages in the river for riding out an easterly gale. Vessels in quarantine generally lie between Grosse isle patch and Grosse isle, to be near the establishment, but the anchorage farther eastward in Quarantine pass, northward of Margaret island, is far preferable.

**Anchorage.**—The inner anchorage at Grosse isle is useful only as a place for vessels to ride quarantine; but the anchorage outside Grosse isle patch (*see page 204*) is a more convenient place for which vessels, on the approach of a strong easterly wind, may bear up, when there is not tidal stream enough for them to reach the anchorage under Crane island, 4 miles farther eastward.

**Tides and tidal streams.**—It is high water at Grosse isle, 57m. and low water 1h. 19m. before Quebec. Springs rise  $19\frac{1}{2}$  feet, neaps,  $14\frac{1}{2}$  feet.

The flood stream begins at 0h. 19m. before low water at Quebec, or one hour after low water by the shore, and it runs for 5h. 10m. The ebb stream begins 0h. 08m. after high water at Quebec, or 1h. 5m. after high water by the shore, and it runs for 7h. 10m.

In the St. Lawrence estuary, the tide increases in range as far up as Grosse isle, at the lower end of Orleans island, where it attains its maximum. This may be considered, therefore, the true head of the estuary; from here the range begins to decrease as the river is ascended. Hence the rise and fall of the tide at St. Roch des Aulnaies and Beaujeu channel is practically the same as at Quebec, but the duration of the rise is a little longer, and the fall a little shorter in time.



The table for the height of the tide at each hour, as given for Quebec on page 216, may be taken as sufficiently correct for this district.

**Grosse isle tail** extends southwestward from Grosse isle, and is joined by a bar, with 15 feet over it at low water, to the banks of Madame island. Two shoals with 11 feet water on them lie on this bar about midway between Grosse isle tail and the banks of Madame island.

**Leading mark.**—The western fall of the hill over cape Tourmente in line with the small rock near the eastern end of Reaux island, bearing N.  $\frac{3}{4}$  W., leads over the bar in about 15 feet water.

**Banks of Madame island**, in their eastern part, extend  $1\frac{7}{10}$  miles southward of Reaux island.

**Leading mark.**—Race island open southward of Margaret island leads southward of these banks, as well as Grosse isle tail and Grosse isle patch.

**Madame reef**, the southwestern end of a shoal extending about S.W. by W.  $\frac{3}{8}$  W.,  $2\frac{1}{4}$  miles from the southwestern end of Madame island, is about 6 cables long east-northeast and west-southwest,  $1\frac{1}{2}$  cables wide, and dries  $7\frac{1}{2}$  feet at low water.

**Light-buoy.**—A red light-buoy, No. 86B, showing an *occulting red* light, is moored in  $4\frac{3}{4}$  fathoms at the southwestern end of Madame reef, with Bellechasse lighthouse bearing about E. by S.  $\frac{3}{4}$  S., distant  $3\frac{1}{10}$  miles.

**Leading marks.**—Berthier church open southward of Bellechasse island, bearing E. by S.  $\frac{3}{4}$  S., leads southward, and cape Tourmente chapel in line with the eastern end of Orleans island, bearing N.E.  $\frac{1}{4}$  N., leads northwestward of this reef.

**Water.**—It is said that good water can be obtained on the northern side of Madame reef, as the principal impurities of the river have subsided before the stream reaches that locality.



**ORLEANS ISLAND**, the eastern end of which lies  $4\frac{6}{10}$  miles west-northwestward of Grosse isle, extends about W. by S.  $\frac{5}{8}$  S., 18 miles, with an average width of  $3\frac{1}{2}$  miles, and it divides the river St. Lawrence into two channels. The island is usually well cultivated on the slopes and in the valleys between the hills, and the summits are generally wooded and attain a height of 550 feet about 3 miles from its western end. Near its eastern end the island rises gradually from a hillock 210 feet high to about 500 feet in the summit over Ste. Famille, and it is wooded down to the river.

The south coast is generally a small cliff, which increases in height towards the western end of the island and at the mouths of the rivers. On the north coast the cliff is at some distance from the St. Lawrence, the intermediate space being flat and cultivated. The south coast is bordered by bare flat rock that extends generally about one cable from the high water mark, while the north coast fringed by a mud flat on which a coarse grass grows, is indented by numerous creeks. These are impassable at about half tide, and are used by bateaux for loading and discharging cargoes.

**Light-buoys placed for dredging purposes.**—For the guidance of the two suction dredges engaged in constructing a ship channel southeast of Orleans island, to lead into the North channel, six light-buoys have been temporarily placed in two sets of three. Each set is moored transversely to the axis of the channel at 250 feet centres, the three buoys marking a width of 500 feet, or half the width of the channel when completed. The middle buoy of the more northerly set is in latitude  $47^{\circ} 00' 36''$  N., longitude  $70^{\circ} 47' 30''$  W. The middle buoy of the more southerly set is about one half mile S.W.  $\frac{3}{4}$  W. from the middle buoy of the more northerly set.

These buoys will be moved in position from time to time to suit the requirements of the dredges. They are not to be used as aids to navigation. They are all painted white, and show *fixed white* lights.

**Dumping ground buoy.**—The material dredged from this channel is being dumped north of Reaux island, and the dumping ground is marked by a light-buoy, which is now moored



in latitude  $47^{\circ} 01' 09''$  N., longitude  $70^{\circ} 45' 55''$  W. The position of this buoy is changed from time to time to suit requirements. This buoy is painted white, and shows an *occulting white* light.

**St. François parish**, at the lower end of the island, embraces both north and south coasts to about half way to St. Jean. A church with a spire is situated S.W.  $\frac{1}{4}$  W.,  $1\frac{1}{2}$  miles from pointe Argentenaye, the eastern end of the island, and on the slope of a hill.

**Government wharf—St. François nord.**—There is a wharf of the north side of the parish, but it is only accessible at high tide. No regular coasting vessel plies in the North channel.

**Government wharf—St. François sud.**—A wharf, with a depth of  $11\frac{1}{2}$  feet at its outer end at low water springs, has been constructed on the south side, about a quarter of a mile above St. François. It is 643 feet long and is provided with a movable slip. A line of market steamers runs daily between here and Quebec.

**Light on wharf.**—On the outer end of the wharf at St. François, 2,500 feet from the church, is a square lantern on the freight shed that, from a height of 34 feet, exhibits a *fixed white* light, visible 11 miles.

**LIGHTS** (*Lat.  $47^{\circ} 00' 12''$  N., Long.  $70^{\circ} 48' 26''$  W.*).—There are two lighthouses at St. François; the northeastern or front lighthouse, a square white building with a red roof, 28 feet high, situated on the shore E.  $\frac{1}{2}$  S., 525 yards from St. François church, exhibits at 30 feet above high water, a *fixed white* light, which should be seen from a distance of 10 miles in clear weather. The southwestern or back lighthouse, a square white building with a red roof, 30 feet high, situated in a field, S.W. by W.  $\frac{1}{4}$  W., 1,410 yards from the front lighthouse, exhibits at 77 feet above high water, a *fixed white* light, which should be seen from a distance of 14 miles in clear weather.

Each lighthouse is fronted by a white rectangular beacon painted white, with a black square in middle facing alignment. The alignment of these lighthouses leads partly through North traverse (see page 229.)



**River Dauphine** flows into the St. Lawrence at  $2\frac{3}{16}$  miles westward of St. François; a small pool at its entrance affords shelter to boats and small craft; boats enter with about an hour's tidal rise, and small craft according to their draught.

**Anchorage.**—There is good anchorage off river Dauphine in  $5\frac{1}{2}$  to 6 fathoms, mud bottom.

**St. Jean**,  $3\frac{1}{2}$  miles southwestward of river Dauphine, is a long straggling village containing a church with a spire, which stands close to the water's edge. There are two sawmills and a butter factory here.

**Government wharf.**—A wharf, 710 feet long, with 18 feet of water at its outer end, extends from this village, about 3 cables westward of the church. It is provided with 3 slips, one being movable. It is used as a shelter for small craft.

**LIGHT** (*Lat.*  $46^{\circ} 54' 54''$  N., *Long.*  $70^{\circ} 53' 47''$  W.).—A square, red wooden lantern on the roof of a yellow freight shed on the outer end of St. Jean pier, exhibits, at 34 feet above high water, a *fixed white* light that should be seen from a distance of 11 miles in clear weather.

**Reporting station.**—St. Jean has a reporting station of the Marine Signal Service. (*See page xliv.*)

**Rivers.**—Rivière la Fleur flows into the St. Lawrence at  $1\frac{1}{2}$  miles, and Maheux brook at  $2\frac{3}{4}$  miles, respectively, westward of St. Jean pier. These rivers run through deep ravines, and generally afford shelter to small craft, which lie aground at low water within their entrances.

**Anchorage** is good off these rivers, but parallel to the shore, and generally at 3 cables distant from the low water line, is a rocky ledge with depths of  $5\frac{1}{2}$  to 7 fathoms over it. Vessels should anchor in Maheux road, between this ledge and the coast of Orleans island.

**St. Laurent village** is 6 miles west-southwestward of St. Jean, the houses being nearly continuous from one to the other; at St. Laurent there is a church with a spire, close to the shore, and a convent just eastward of it. A local steamer plying between Quebec and Berthier calls twice daily at the wharf.



**Government wharf.**—A wharf, 732 feet long, and giving a depth of 12 feet of water at its outer end at low water, extends from the island near the church. The freight shed, a rectangular light drab building with a red roof, stands over the slip in the middle of the end of the pier. The wharf is provided with three slips.

**LIGHT.**—A lighthouse has been erected on St. Laurent wharf, from which is shown a light, *flashing white, every seven seconds*. The light, which is elevated 44 feet above high water and is visible a distance of 12 miles, is exhibited from a red, steel skeleton tower surmounted by a white wooden watch room and a red octagonal iron lantern.

**Tides and tidal streams.**—It is high water at St. Laurent, 20 minutes, and low water 30 minutes earlier than Quebec. Springs rise 18 feet, neaps rise  $13\frac{1}{2}$  feet.

The flood stream in the offing begins 0h. 25m. after low water at Quebec, or 55 minutes after low water by the shore, and it runs for 5h. 0m. The ebb stream begins at 0h. 50m. after high water at Quebec, or 1h. 10m. after high water by the shore, and it runs for 7h. 25m.

**Patent slip.**—Half a mile westward of St. Laurent Government wharf is a patent slip used for repairing schooners and small coasting steamers. The cradle is 125 feet long and can accommodate vessels drawing 11 feet.

**Anchorage.**—St. Patrick hole,  $1\frac{1}{2}$  miles westward of St. Laurent, is off the mouth of St. Patrick river, a small stream ending in a ravine which is faced by cliffs on both sides. There is good anchorage here in 8 to 9 fathoms.

**Marand rocks** are several rocky patches that completely fill the western cove on the southern coast of Orleans island, which extends about  $1\frac{1}{2}$  miles eastward of Ste. Pétronille lighthouse.

**Buoy.**—A red steel conical buoy, No. 88B, is moored in  $3\frac{1}{2}$  fathoms off the southern side of Marand rocks, with Ste. Pétronille lighthouse bearing N.W. by W.  $\frac{1}{2}$  W., distant  $7\frac{1}{2}$  cables.



**Leading marks.**—The chimney of the lunatic asylum at Beauport, well open southward of the pier at the western point of Orleans island, bearing W.N.W., or St. Laurent lighthouse open southward of the southern end of Orleans island, bearing E.  $\frac{1}{2}$  S., leads southward of these rocks.

**LIGHT.**—A square white lighthouse, having sloping sides and a square lantern with a red roof, 34 feet high, on pointe de l'anse du Fort, Ste. Pétronille, at the south western end of Orleans island, exhibits at 33 feet above high water, a *white* light, *occulted* thus: visible *5 seconds*, eclipse *3 seconds*, which should be seen from a distance of 3 miles in clear weather.

**The southwestern point** of Orleans island is marked by a large hotel, and a pier from which a steam ferry plies regularly to and from Quebec.

Ste. Pétronille church, which has a spire, dominates the point, and an Episcopal church with a small spire, stands between it and the hotel.

**Anchorage.**—There is anchorage almost anywhere clear of the shoals between Crane island and Quebec; the best holding ground is generally on the northern side of the channel; a good position with strong westerly winds is under pointe St. Jean; many vessels wait a favourable wind, southward of the western point of Orleans island. Good anchors and cables are necessary with a strong westerly wind and the ebb stream.

**QUEBEC HARBOUR** comprises river St. Lawrence and its navigable tributaries between St. Patrick hole and Carouge point (cap Rouge), at about 8 miles above the city. It affords excellent anchorage over its greater part, the water between the banks off each shore being clear and deep.

The management of the harbour is vested in the Harbour Commission. (*See also page 235.*)

**Depths.**—The least depth of water in the approach to Quebec by the ship channel in the South channel, is 30 feet at extreme low water, 43 feet at high water neaps, and 49 feet at high water springs. These depths obtain in the dredged channels at Beaujeu west narrows and off St. Thomas bank, which are respectively about 23 and 28 miles above the St. Roch traverse, where the contracted part of the river, which may be called the



ship channel proper, begins at a distance of 60 miles below Quebec. (*See note re silting in St. Thomas channel page 202, and semaphore page 191.*)

By the North channel the least depth is 25 feet at low water in North traverse at its southern end. (*See page 228.*)

**Beauport**, a large village about  $2\frac{1}{2}$  miles northeastward of Quebec, to which it is nearly joined by houses, has a large church with two steeples. The lunatic asylum, a large collection of buildings, with a flagstaff rising from the middle of a mansard roof, and a large black chimney, is almost midway between Beauport church and Quebec. The falls of Montmorency are situated about  $2\frac{3}{4}$  miles east-northeastward of Beauport.

**Government wharf.**—A wharf at Beauport, on the side of the mouth of the river, extends about 520 feet southward into the St. Lawrence. It dries at low tide.

Extending 700 feet, beyond the wharf, a bottle-shaped basin 1,000 feet long with a greatest width of 300 feet, has been dredged to a depth of 4 feet above extreme low water mark, to accommodate small craft trading to the wharf. Three spar buoys are moored off the wharf as a guide to this craft.

**Beauport bank.**—Fronting the village and extending to Princess Louise embankment, is a flat of slate covered with mud that extends in some parts 7 cables from the shore, and is fringed by shoal water for a further distance of one third of a mile to the depth of 8 fathoms. St. Charles river flows by several channels over the southwestern part of this bank into the St. Lawrence.

**Light-buoy.**—A red cylindrical light-buoy No. 138B, exhibiting an *occulting red* light, is moored in about 6 fathoms of water on the southeastern side of Beauport bank with Beauport church bearing N.  $\frac{1}{4}$  E. distant 13 cables.

**St. Charles river basin.**—**Light and spar buoys.**—A considerable area extending northward from Princess Louise embankment to southward of the outlet of St. Charles river, through the mud flats, has been dredged to a depth of 35 feet at low water. A red, steel, cylindrical light-buoy No. 140B, exhibiting an *occulting red* light marks the turn in the channel into this basin. A similar buoy No. 2B, and two red spar buoys mark the northern limit of this dredged area.



**LEADING LIGHTS.**—Front light.—Near the northeast corner of Princess Louise tidal basin, is erected a white, square, steel skeleton tower surmounted by an iron box painted red. From this tower, at a height of 80 feet above high water, is exhibited a *fixed red* light, visible 4 miles. Back light.—The back light, exhibited from a pole surmounted by a grey iron box containing the light, is situated on the east side of the ramparts at the foot of Ste. Famille street. It is 979 yards S.W. by W.  $\frac{3}{4}$  W. from the front light, and exhibits, at a height of 130 feet, a *fixed red* light, which should be visible for a distance of 5 miles.

These lights in line lead between pointe Lévis shoal and Beauport bank, to the southwest face of the ocean wharves. They show for a small arc on either side of their alignment.

**Leading and clearing marks.**—Besides the foregoing leading lights, the following marks are of use in connection with Beauport bank:—

L'Ange Gardien lighthouses in line, bearing N.E.  $\frac{1}{4}$  N., lead between Beauport bank and the shoals off Orleans island; St. John church spire in line with the northern end of the northern Immigration offices at Princess Louise basin, bearing W.S.W., leads southward of the bank westward to St. Charles river buoy; and the southern end of Parliament house at Quebec in line with the northern end of the Immigration offices on Commissioner's wharf, bearing S.W. by W., leads southeastward of the bank while westward of the line of Beauport church, bearing N.N.W.

**Directions.—Crane island to Quebec** (*Continued from page 196*). From a quarter of a mile southward of Crane island lighthouse, steer to pass between the black light-buoy No. 71B, and red light-buoy No. 72B, and then pass red buoys Nos. 74B, 76B, 78 $\frac{1}{4}$ B on starboard side, and black buoys Nos. 73B, 73 $\frac{1}{2}$ B, 75B and 77B on the port side. After passing buoys Nos. 77B and 78 $\frac{1}{4}$ B, steer to pass between the light-buoys marking Empress shoal and the light-buoy on Wye rock, No. 79B, by bringing the apparent northern extreme of the hills on the south shore just open southward of Crane island lighthouse, E. by

Variation 20° 10' W. to 19° 15' W.



N.  $\frac{3}{4}$  N. This mark on astern leads also south of light-buoys Nos. 78 $\frac{1}{2}$ B and 84B, about 2 cables northward of Wye rock, and the same distance southward of Empress shoal, both marked by light-buoys. When about 2 miles W. by S. of Wye rock steer to pass half a mile southward of St. Jean lighthouse; this course passes three quarters of a mile northward of Bellechasse island lighthouse, and half a mile southward of Madame reef light-buoy. From southward of St. Jean lighthouse steer for a position midway between St. Laurent lighthouse and Beaumont reefs light-buoy. Continue westward with the coast of Orleans island close aboard, but keep St. Laurent lighthouse open southward of the southern end of Orleans island to clear Marand rocks, which are marked by a red conical buoy, No. 88B. When Ste. Pétronille lighthouse bears N.W.  $\frac{3}{4}$  W., steer west-northwestward until the Quebec range red light on ramparts near Ste. Famille street comes in one with the red light on the northeast corner of Princess Louise tidal basin, bearing W.S.W.

**ANCHORAGE** may be had between Quebec and Lévis, in 12 to 15 fathoms, mud bottom, with the exception of the space where telegraph, telephone and electric light cables are laid. The northeast limit of this prohibited area is the line joining the south corners of Crawford and Barras wharves; the southwest boundary being a line drawn from the middle of the Canadian National railway wharf at Lévis to midway between King and Napoleon wharves, Quebec. This space is indicated in the daytime by signboards, and at night by *red* lights.

**TIDES.**—It is high water, full and change, at Quebec at 6h. 32m.; springs rise 18 $\frac{1}{4}$  feet, neaps 13 feet; neaps range 10 $\frac{1}{2}$  feet.

The rise of the tide is more rapid than the fall, as in all estuaries. Low water is not far from the same level throughout the month, whereas the height of high water varies in the usual way from springs to neaps. The features of the tide thus indicate Quebec to be in the river above the true head of the estuary, which is properly at the lower end of Orleans island.

As a rule, the water rises higher with strong northeasterly winds, and falls lower with southwesterly winds. The level



at Quebec is also affected appreciably by the height of the water in the river; which is highest in the spring about the month of April, and falls gradually until late in the autumn, and is lowest in winter.

From the opening of navigation until the middle of September, the morning high waters at Quebec are the highest. For the remainder of the season of navigation, the evening high waters are highest.

**Tide tables** for Quebec are published annually by the Hydrographic Survey in the Department of Marine and Fisheries. They may be obtained at the Signal Service office in Quebec, the agencies of the Marine Department in Quebec and Montreal, or by application to the Department of Marine and Fisheries, Ottawa.

These tables show the time of the tide and the height above the low-water datum of the chart. Allowance is also made in them for the various inequalities to which the tide is subject, including the annual variation. With the tables, "tidal differences" are given for the localities from the Traverses to lake St. Peter, as well as differences by which to find the time when the tidal streams turn.

**Hourly height of the tide.**—The following table shows the height of the tide at Quebec at every hour after low and high water, above the low-water datum used in the tide tables. The heights are for average spring and neap tides.

SPRING TIDE. (Average range 18 feet)		NEAP TIDE. (Average range 10½ feet)	
Hour	Feet	Hour	Feet
At Low Water.....	0.0	At Low Water.....	2.7
1 h. after L.W.....	5.1	1 h. after L.W.....	4.6
2 h. ".....	10.0	2 h. ".....	7.9
3 h. ".....	13.9	3 h. ".....	10.6
4 h. ".....	16.9	4 h. ".....	12.3
4½ h. (At H.W.).....	18.0	5 h. ".....	13.1
1 h. after H.W.....	15.3	5½ h. (At H.W.).....	13.2
2 h. ".....	11.2	1 h. after H.W.....	12.0
3 h. ".....	9.1	2 h. ".....	10.4
4 h. ".....	7.0	3 h. ".....	8.9
5 h. ".....	4.7	4 h. ".....	7.2
6 h. ".....	2.7	5 h. ".....	5.4
7 h. ".....	0.9	6 h. ".....	3.9
7½ h. (At L.W.).....	0.0	7½ h. (At L.W.).....	2.7



**Variations in the range.**—The more important variations from the average ranges above given, are:—

(1) With the moon's distance. When Perigee occurs at the new or full moon, the height of one of the spring tides of the month may be *three feet* more than the other.

(2) When the moon is in high declination, north or south of the equator, a few days occur when the two tides of the day are quite unequal in range. At such times, the spring range may be *a foot and three quarters* more or less than the average. The neap tides are similarly affected.

**Tide levels.**—The tidal observations, taken by the Tidal Survey continuously since 1895, are obtained by a self-registering tide gauge at the dry dock at Lévis; and the observations are accurately reduced throughout to the original low-water datum of the Admiralty chart of Quebec harbour. This datum is preserved by reference to a bench mark cut on the Marine and Fisheries building at Quebec. (See the reference on the chart of Quebec harbour.)

The height of mean sea level, as deduced from the hourly height of the tide, day and night during thirteen complete years, is 8.598 feet above the low-water datum.

The masonry sill of the dry dock at Lévis is 7.74 feet below the datum. Hence, to find the depth of water on the sill of the dock at any tide, add 7.7 feet to the height of high water as given in the "tide tables."

**Tidal streams.**—The flood stream begins at 1h. 10m. after low water by the shore, and runs 5h. 0m.; the ebb stream begins at 1h. 5m. after high water by the shore, and runs 7h. 30m. Close to the shore the stream turns about 20 minutes after high and low water, the flood making first by the north shore and the ebb by the south shore.

The tidal streams run generally in the direction of the river, the ebb stream being strongest by the south shore, and the flood by the north shore. The flood stream sets rather towards Beauport bank, and should be guarded against. The ebb attains a rate of  $4\frac{1}{2}$  knots off pointe Lévis, and the flood of  $3\frac{1}{2}$  knots off the citadel.



## CHAPTER XXIII

### NORTH CHANNEL, NORTH TRAVERSE, ORLEANS CHANNEL AND QUEBEC

**NORTH CHANNEL**, above Goose cape, is not yet generally used for navigation, but cases may occur as, for instance, when South channel is obstructed by ice, in which it may be necessary to use it.

**The entrance** to North channel, between the reef which extends eastward about one mile from Baleine point, the eastern end of Coudres island, and the shoals which stretch across Eboulements bay, is  $1\frac{1}{2}$  miles wide, and the depth in it reaches 30 fathoms. The narrowest part of the channel northwestward of Coudres island is one mile wide, and lies between Prairie shoal, off Prairie point, and the mainland near cape Corbeau (*see page 225.*)

**GOOSE CAPE.—LIGHT** (*Lat.  $47^{\circ}-29'-15''$  N., Long.  $70^{\circ}-14'-00''$  W.*).—A square white lighthouse, 42 feet high, with a dwelling attached, on Goose cape, exhibits, at 55 feet above high water, an *occulting white* light, visible *10 seconds*, eclipsed for *5 seconds*, which should be seen from a distance of 12 miles in clear weather.

**Fog horn.**—A hand fog horn is sounded in foggy weather, upon vessels being heard in the vicinity.

**Mount Eboulements**, N.N.W.  $\frac{1}{2}$  W.,  $3\frac{1}{2}$  miles from Goose cape, is 2,551 feet high, and the highest of the ranges that form the northwestern side of the river in this locality. It is surrounded by smaller conical mountains.

**Cape Martin** bears W.  $\frac{3}{4}$  S.,  $2\frac{9}{10}$  miles from Goose cape, and is a conspicuous sharp projecting cliff. Shoal water lies in the bay between cape Martin and Goose cape, and about midway it is a distance of nearly 6 cables from the shore.

Variation  $20^{\circ} 45'$  W.



**Anchorage.**—Between Goose cape and cape Martin in 7 or 8 fathoms, with the western end of the shingle beach that extends westward from Goose cape bearing N.W., is good anchorage which is sheltered from easterly winds.

**Tidal streams.**—The streams, however, are irregular here, and occasionally strong; thus when at anchor too far out in  $8\frac{1}{2}$  fathoms, and at neaps, the first of the flood comes round Goose cape with a great rippling, and sets slanting on the shore at the rate of 5 knots, which soon decreases to  $3\frac{1}{2}$  knots. About one hour from its commencement the rate of the stream increases to  $4\frac{1}{2}$  knots, and after continuing so for a short time, it decreases to  $2\frac{1}{2}$  knots, which rate it retains for the remainder of the tide, setting fairly along shore. Farther out, in 10 fathoms the ebb also is strong.

**Leading mark.**—Cape St. Joseph in line with cape Martin, bearing West, leads close southward of the depth of 18 feet at low water, within this anchorage.

**Eboulements bay**, between cape Martin and cape St. Joseph, is about 3 miles across, 6 cables deep, and it dries at low water, except in some channels through which rivière du Moulin discharges. Small craft lie on the mud in this bay within the large boulders on the edge of the shoals.

**Les Eboulements village** is situated about N.N.W.  $\frac{3}{4}$  W.,  $1\frac{1}{4}$  miles from cape Martin. It contains the church of Notre Dame des Eboulements, which is 1,186 feet above high water. The Canadian National Railway, Quebec-Murray bay section, passes through the village.

There is also a settlement on the shores of Eboulements bay. The country in this locality is well cultivated, even on the steep slopes of the mountains. The principal industries are farming, pulpwood and the tourist traffic.

**Cape St. Joseph**, is the name given to the end of a promontory which is faced by sand cliffs.

**Government wharf.**—A wharf, 889 feet in length, extends from the middle of the promontory. It has a depth of water of 11 feet at its outer end at low water. It is provided with



two slips, one being movable. The Canada Steamship Lines Limited call here twice daily during the summer season. The wharf provides some shelter for sailing vessels.

**LIGHT.**—A lantern on the roof of a brown shed at the end of cape St. Joseph pier, exhibits, at a height of 22 feet above high water, a *fixed white* light, that should be seen from a distance of 9 miles in clear weather.

**Fog signal.**—On the outer end of the pier, a hand fog horn is maintained by the Canada Steamship Lines Limited and is used only to answer signals from their own vessels.

**Cape Corbeau** lies about  $3\frac{3}{4}$  miles westward of cape St. Joseph. St. Joseph bank dries for about half a mile off the shore for one mile westward of cape St. Joseph, whence the bank gradually closes cape Corbeau. There is a conspicuous landslip on the shore at  $1\frac{1}{2}$  miles westward of cape St. Joseph.

**Leading lights.**—The front light, *fixed white*, is situated at about  $1\frac{4}{10}$  miles eastward of cape Corbeau wharf, and is exhibited at 96 feet above water from a red steel skeleton tower, surmounted by an enclosed white wooden watchroom and red octagonal lantern. The upper portion of the side of the tower facing the alignment, is covered with wooden slats, painted white. The back light, *fixed white*, is exhibited at 309 feet above water from a similar tower, and is 1,685 feet N.E.  $\frac{1}{4}$  E. from the front light. These lights in line, lead in the channel from cape Corbeau to cape Maillard. (See page 226.)

**Government wharf.**—An irregular shaped wharf extends southward from cape Corbeau. It has a total length of 1,230 feet and a depth of water of 15 feet at its outer end at low water. It is provided with four slips, one being movable. The wharf is in poor condition.

**LIGHT.**—A wooden tower, 27 feet high, painted white, with sloping sides, surmounted by a square lantern, situated in front of the freight shed near the outer end of the Government wharf



at cape Corbeau, exhibits, at a height of 28 feet above high water a *fixed white* light, visible 10 miles from all points of approach by water.

**Directions.**—To clear the shoal water eastward and westward of cape St. Joseph when going westward, keep the landslip open southward of the pier at cape St. Joseph, bearing W. by N., until Goose cape is in line with cape Martin, bearing E.  $\frac{1}{2}$  N., which mark leads in mid-channel to bay St. Paul.

**Bay St. Paul,** between cape Corbeau and cap de la Baie (or cap d'Arrêt), dries nearly to the line of these points, and there is no passage into either of the rivers at the head of the bay at low water. The point in the middle of the bay, separating the mouths of the rivers, is wooded and there is a conspicuous sand hill, 30 feet high, on it. The town of Baie St. Paul is situated near the bridge which crosses rivière du Gouffre, the eastern stream, about one mile from the entrance, and it contains a church with two spires, which is visible from some parts of the channel. Its population in 1921 was 2,291. The principal industries are farming and the pulpwood trade. The Canadian National Railway, Quebec-Murray bay section, passes through the town.

**Tidal stream.**—The ebb stream sweeps round this bay at a rate of  $7\frac{1}{2}$  knots at springs, and makes a strong tide-rip which is dangerous for boats.

**Anchorage.**—There is a limited space between the north-western edge of the stream and the shoal water of the bay, where small vessels anchor securely in 5 fathoms water. It is situated about a quarter of a mile eastward of the lighthouse, and about one cable distant from the depth of 18 feet at low water.

**The northern shore** of the river, westward of bay St. Paul, rises steeply to the summits of high wooded hills, that attain a height of 2,650 feet N. by W.  $\frac{1}{2}$  W. nearly 2 miles from cape Maillard. At  $1\frac{1}{2}$  miles southwestward from cap de la Baie, a small strip of low flat land, lying between the foot of the hills and high water mark, commences, and extends westward to la Grande pointe, a distance of 5 miles. Numerous houses, form-



ing the parish of Petite rivière, are built on this flat. Among them is St. François Xavier church, with a single spire. Several valleys indent the hills, the most marked being about 2 miles eastward of St. François Xavier church.

**La Baie bank.**—A plateau of rock, covered with mud and boulders, and which dries at low water, extends 6 cables off cap de la Baie, and thence about three quarters of a mile off the shore generally southwestward to Petite rivière, a distance of  $3\frac{3}{4}$  miles, southwestward of which the plateau continues 5 to 3 cables off the land to Sault au Cochon, a further distance of 8 miles, where the water is deep to within about  $1\frac{1}{2}$  cables from it. From cap de la Baie southwestward to Sault au Cochon, the water deepens to 5 fathoms about 2 cables off the flat which dries at low water.

**Buoy.**—A conical red buoy, No. 104B, is moored in 4 fathoms water, close southward of Claude shoal, the highest accumulation of boulders off cap de la Baie, and with that cape bearing N. by W.  $\frac{1}{2}$  W., distant  $6\frac{1}{2}$  cables.

**Clearing marks.**—Cape Gribanne open southeastward of cape Maillard, bearing S.W.  $\frac{3}{4}$  W., leads southeastward of this shoal northeastward of Petite rivière, and the first notch in the hills northwestward of mount Eboulements in line with cape Branche, the northwestern end of Coudres island, bearing N.E.  $\frac{3}{4}$  E., leads southeastward of the shoal southwestward of St. François Xavier church.

**Light-buoy.**—A steel spar light-buoy painted red, No. 106B, is moored in 5 fathoms of water off La Grande pointe, about  $1\frac{1}{3}$  miles E.N.E. of cape Maillard, and exhibits an *occulting red* light.

**Leading Lights.**—**St. François river.**—Leading lights, indicating the channel through the flats from the main channel, used only at high tides, are located at St. François Xavier,  $1\frac{1}{3}$  miles westward of Petite rivière. The front light, *fixed red*, 1,200 feet N.E.  $\frac{3}{4}$  E. from the church, is exhibited at a height of 25 feet above high water from a mast with a small white shed at its base. The back light, *fixed red*, 735 feet N.W.  $\frac{1}{2}$  N. from the front light, is shown from a mast at a height of 70 feet.



**Cape Maillard**, about  $3\frac{1}{2}$  miles southwestward of Petite rivière, rises to la Petite Butte Ronde, a conical wooded hill 774 feet high, at about 3 cables inland, and is conspicuous from the northeastward and southwestward. There are two small shingle beaches, named Petit Abattis and l'Abattis, situated westward of cape Maillard; and on l'Abattis, which is  $1\frac{1}{2}$  miles distant from that cape, there are several conspicuous houses.

**Sault au Cochon village** contains a group of houses, a small church, a disused mill and a wharf which marks the limit of the low water line. Southwestward of Sault au Cochon the low water line is only a short distance from high water mark.

**Cape Gribanne** lies  $4\frac{1}{4}$  miles southwestward of Sault au Cochon.

**Longue pointe**, a rocky ledge, extends southeastward from the land at 4 cables northeastward of cape Gribanne, with a least depth of 24 feet.

**Light-buoy**.—A red cylindrical light-buoy, No. 108B, exhibiting an *occulting red* light, is moored close southeastward of this ledge.

**Clearing mark**.—The houses at l'Abattis well open southeastward of the wharf at Sault au Cochon, bearing N.E., leads close southeastward of this ledge, in about 7 fathoms.

**Landing** may be effected in boats after half flood, at l'Abattis, Petit Abattis, and la Grande pointe, and generally along the coast of Petite rivière, but care must be taken to avoid the boulders that stand above the general level of the flat ground between high and low water marks. Petit Débarquement, on either side of a small mound joined to the mainland by a sandy beach at one mile northeastward of cape Gribanne, is the best landing place.

**CAPE BRULE** lies  $2\frac{1}{10}$  miles southwestward of cape Gribanne.

**LEADING LIGHTS**.—Front light (*Lat.  $47^{\circ}-06'-32''$  N., Long.  $70^{\circ}-43'-01''$  W.*)—From a white open-frame tower, 24 feet high, on the edge of a cliff at cape Brûlé, is exhibited, at a height

Variation  $20^{\circ} 20'$  W.



of 128 feet above high water, a *fixed white* light, which should be visible for a distance of 12 miles in clear weather. There is a white dwelling nearby. Back light.—Situated N.N.E.  $\frac{7}{8}$  E., distant 330 feet from the front light, is a similar tower, 34 feet high, which exhibits, at a height of 158 feet above high water, a *fixed white* light, visible a distance of 17 miles in clear weather. These lights in line lead through the northeastern end of the narrows between the western end of Brûlé bank and the northeastern point of Traverse spit. (See page 229.)

**Cape Tourmente**, S.W. by W.  $\frac{1}{2}$  W.,  $1\frac{3}{4}$  miles from cap Brûlé, marks the western end of the land rising steeply from the river. Its summit is a densely wooded hill, 1,874 feet high, at 7 cables northward of the cape, on the slope of which, and at 1,692 feet above high water is a small chapel, the spire of which is visible from many parts of the river.

## SOUTH SIDE OF NORTH CHANNEL

**COUDRES ISLAND.**—Baleine point, the eastern end of Coudres island, lies S.W. by W.  $\frac{1}{2}$  W., 5 miles from Goose cape, and the island extends W. by S.  $\frac{1}{2}$  S.,  $5\frac{9}{10}$  miles from the point, with an average width of 2 miles. Baleine point slopes from a wooded mount, 63 feet high, and appears as an island from a short distance. The northern coast of the island rises steeply to wooded hills, 390 feet high, southward of which is a cultivated valley separating them from a ridge, 62 feet high and faced by cliff, that extends generally along the southern coast. Numerous houses are built on this ridge, and a round stone mill stands near its middle.

The southwestern points of the island are at the base of bold bluffs, and a mound, 90 feet high, known as la butte à Gaillard, rises northward of le Havre, the northwestern of the two coves at the southwestern end of the island. The point extending southwestward from la butte à Gaillard is a wooded hillock 40 feet high, and appears as an island from a short distance.

**Light.**—Situated on the last described point, about  $1\frac{1}{2}$  cables from its outer end, a *fixed white* light, at a height of 30 feet above high water, is shown from a pole with a small white shed at its base.



Cape Branche, the northwestern point of the island, rises to a steep wooded bluff 180 feet high.

St. Louis church, with two spires, is situated on the northern shore of l'Anse, the southeastern cove at the southwestern end of the island.

Coudres island is surrounded by reefs, on several of which are large rows of stakes with nets affixed to catch the marsouin and white fish that frequent this part of river St. Lawrence in the early part of the summer.

**Prairie bay.—Anchorage.**—Prairie bay, lies on the northern side of Coudres island between cap à l'Aigle and Prairie point, and is one of the most sheltered anchorages in the river. The shore dries at low water  $1\frac{1}{2}$  cables from the high water mark, and depths less than 5 fathoms extend 3 cables farther.

Goose cape shelters Prairie bay from easterly gales, and prevents any sea of consequence from rolling in, so that this anchorage is quite safe in all winds. The clay bottom is good holding ground, and the tidal stream easy if the vessel be not anchored too far out. The anchorage space is nearly one mile long and about 3 cables wide, in depths of 3 fathoms to 10 fathoms, which latter depth is about three quarters of a mile from the shore, and beyond which the water deepens suddenly, and the streams are rapid. The best berth is in 6 fathoms, near the middle of the bay, where an easterly gale has been ridden out with ease and safety. This is a good anchorage to run for for vessels meeting an easterly wind below South traverse.

**Government wharf.**—A wharf, 337 feet long, extends from cap à l'Aigle, and has a depth of 29 feet at its outer end at low water. It is provided with two slips.

**LIGHT.**—A lantern on a mast, 35 feet high, at the outer end of the pier at cap à l'Aigle, the eastern entrance point of Prairie bay, exhibits, at 38 feet above high water, a *fixed white* light, that should be seen from a distance of 6 miles in clear weather.

**Prairie shoal** extends three quarters of a mile off shore between Prairie point and cape Branche. Numerous boulders on the shoal dry at low water, about 6 cables off shore.



**Buoy.**—A black steel cylindrical light-buoy No. 103B, showing an *occulting white* light, is moored in 14 feet water off this shoal in a position from which cape Corbeau pier light bears N.N.W.  $\frac{1}{2}$  W., distant  $1\frac{2}{10}$  miles.

**Leading and clearing marks.**—Cape Corbeau leading lights (*see page 220*) in line, bearing N.E.  $\frac{1}{4}$  E., lead in mid-channel westward of this shoal. The church of Notre Dame des Eboulements open northward of the inner end of the pier at cape St. Joseph, bearing E. by N.  $\frac{3}{4}$  N., leads close northward, and l'Islet d'en haut, at the southwestern end of Coudres island, open westward of cape Branche, bearing S.  $\frac{3}{4}$  W., leads westward of this shoal. The two points on the northeastern side of bay St. Paul in line, bearing N.W.  $\frac{1}{4}$  W., lead northeastward of the shoal.

**Directions.**—From below Middle ground, stand over towards les Eboulements, going no nearer to the reef off the northeastern end of Coudres island than the depth of 10 fathoms. When cap à l'Aigle light bears W.  $\frac{1}{2}$  N. steer along the coast of Coudres island, passing close to cap à l'Aigle into the anchorage. From the westward, approach with the church of Notre Dame des Eboulements open northward of the inner end of the pier at cape St. Joseph, bearing E. by N.  $\frac{3}{4}$  N., until St. Pierre church is shut in behind the northeastern side of bay St. Paul, or the points on the northeastern side of the bay are in line, when haul into the anchorage. Vessels should moor at Prairie bay, or at least have a kedge out to insure keeping a clear anchor.

**Tides and tidal streams.**—It is high water, full and change, at Prairie bay at 4h. 25m.; springs rise 17 feet, neaps  $10\frac{1}{2}$  feet. In the bay the flood stream is longer than the ebb, the water flowing for 6h. 20m., and ebbing for 6h. 0m., and this differs from the streams in every other part of the river. The flood stream, at the anchorage in 6 fathoms, is stronger than the ebb, its rate being about 4 knots at springs. The ebb stream is turned off to a great extent by Prairie shoal; its rate for the first two hours is about 2 knots; it then slacks for about five minutes so completely, that a vessel will swing to the wind; then the stream becomes stronger and regular during the remainder of the tide, its rate being about  $3\frac{1}{2}$  knots at springs.



**Anchorage** under Coudres island in easterly winds is very good, the best position being in 7 fathoms, with the southern point of Coudres island bearing between East and E. by N.

**Coudres bank** extends southwestward from Coudres island, and shoals rapidly within the depth of 5 fathoms. There is good anchorage on its northwestern side in 7 to 8 fathoms.

**Clearing mark.**—The landslip near cape St. Joseph, open northwestward of cape Branche, bearing N.E., leads northwestward of this bank till abreast cape Maillard. Vessels anchoring may swing into this line, but not farther northeastward than the southern point of Coudres island bearing East.

**Neptune rock** (rocher de Sault au Cochon) lies nearly 15 miles southwestward of Coudres island, and about 6 cables southeastward of the edge of the shoals. It is about a cable in length, northeast and southwest, and has two heads, both of which are one foot above high water spring tides. There are shoals and many rocks that dry between Neptune rock and Burnt cape ledges.

**Burnt cape ledges** are an extensive chain of graywacke and slate rocks. The southwestern end is an islet 12 feet high, which bears S.E. by E.  $\frac{5}{8}$  E.,  $1\frac{3}{4}$  miles from cap Brûlé.

**Brûlé bank.**—The northeastern end of Brûlé bank in 3 fathoms bears E.  $\frac{1}{4}$  N.  $1\frac{4}{10}$  miles from cap Brûlé, and the bank, a sand flat which partly dries 5 feet at low water, extends thence southwestward 4 miles. The southwestern part of the bank is joined by shoal water to the shoals extending southwestward from Burnt cape ledges. The channel between Brûlé bank and the northwestern shore is 6 cables wide, and there are depths of  $5\frac{1}{2}$  to 14 fathoms water in it. Brûlé cul de sac, an inlet in the banks, lies between the northeastern part of Brûlé bank and Burnt cape ledges, and must be avoided by keeping the north shore aboard, after arriving off the eastern part of the ledge.

**Buoy.**—A black can buoy, No. 109B, is moored in 4 fathoms off the northeastern end of Brûlé bank, with cap Brûlé principal lighthouse bearing W. by S., distant  $1\frac{8}{10}$  miles.



**Leading mark.**—The western end of Two Heads island in line with the western end of Burnt cape ledges, bearing S.  $\frac{1}{2}$  E., leads over the northeastern end of Brûlé bank in a depth of 18 feet.

**NORTH TRAVERSE.**—The narrows, east of Orleans island, are now being dredged to connect the deep water of the North channel to that of the main channel between Madame reef and St. Jean, with a minimum depth of 35 feet at low water. At present the minimum depth is 25 feet. It is not advisable to make use of the new channel until the dredging operations have been completed and suitable aids to navigation installed.

The northeastern end of the narrows lies between the western end of Brûlé bank and the northeastern point of Traverse spit.

**Traverse spit** is an extensive sand shoal extending E.N.E.,  $2\frac{1}{2}$  miles from the northeastern end of Orleans island. It dries soon after half ebb thereby greatly lessening the difficulty of navigating the adjoining portion of the narrows.

**Light-buoy.**—A black light-buoy, No. 111B, is moored in 3 fathoms on the eastern side of the narrows and at the southwestern extreme of Brûlé bank, and exhibits an *occulting white* light.

**Leading line.**—The two leading lights on cape Brûlé in line bearing N.N.E.  $\frac{7}{8}$  E., lead to the northeastern end of the narrows.

**Light-buoy.**—A black cylindrical buoy, No. 113B, is moored in 28 feet of water E. by N., and distant  $1\frac{1}{2}$  miles from pointe Argentenaye, and exhibits an *occulting white* light. It marked the eastern side of the channel before dredging operations commenced.

**Tides.**—It is high water, full and change, at North traverse, Orleans island, at 5h. 10m.; springs rise 17 feet, neaps, 13 feet.

**North channel.**—**Directions.**—From southward of cap St. Joseph keep cape Martin and Goose cape in line astern until cape Corbeau leading lights are in line bearing N.E.  $\frac{1}{4}$  N., then steer S.W.  $\frac{1}{4}$  W. up channel with these lights in line astern, until off cape Maillard, when keep the first notch in the hills north-



westward of Mont Eboulements in line with cape Branche, bearing N.E.  $\frac{3}{4}$  E., till off Sault au Cochon, after which the shore becomes bold.

If on the southeastern side of the channel, do not close cape Branche to less than half a mile, or less than 10 fathoms water, in passing, and that with due caution, for the bank off the island is steep-to, southward of the cape. After passing Coudres island the edge of the bank may be approached to 7 fathoms, until abreast of Neptune rock.

If on the northwestern side of the channel, keep cape Gribanne open southeastward of cape Maillard, bearing S.W.  $\frac{3}{4}$  W., to clear the shoal off cap de la Baie, until as far westward as Petite rivière.

After passing Sault au Cochon the houses at L'Abattis well open of the wharf at Sault au Cochon, bearing N.E., just clears Longue pointe, after which keep the northern shore well on board until abreast cap Brûlé. Then bring and keep the leading lighthouses (open-framed towers) on that cape in line astern, bearing N.E. by N., through the eastern narrows of North traverse, northwest of black light-buoy No. 111B, until the upper St. François lighthouse is slightly open southeastward of the lower one, bearing S.W. by W.  $\frac{1}{2}$  W. Steer with this mark on until abeam of black buoy No. 113 B when shape course to pass half a mile south of St. François front lighthouse, S.W.  $\frac{1}{4}$  W., when gradually close the coast of Orleans island to the distance of a quarter of a mile.

**Tidal streams.**—The streams in North channel attain their greatest rate between Coudres island and bay St. Paul, where the rate of the ebb is  $7\frac{1}{2}$  knots, and of the flood about 6 knots, at springs. The streams set fairly through North traverse, and attain a rate of  $3\frac{1}{2}$  to 4 knots at springs. In strong breezes opposed to these streams there is a high breaking sea that is very dangerous for boats. In North channel the streams turn at about the same times as those in the opposite part of South channel.

**ORLEANS CHANNEL.**—This channel lies between the northern side of Orleans island and the mainland. It is very narrow, being nowhere more than 5 cables in width with several



shoals in mid-channel. It is not suitable for vessels drawing over 15 feet water, and although well buoyed and marked by leading lights should not be attempted without a pilot or local knowledge and acquaintance with the appearance of various conspicuous objects in the district.

Westward of cape Tourmente to pointe aux Prêtres and Ste. Anne river the shore is low, the mountain range lying some distance back. Grassy flats fringe the high line, and between cape Tourmente and pointe aux Prêtres is an extensive sand bank called Séminaire spit.

**Buoys.**—A red conical buoy, No. 120B, marking the south-eastern side of Séminaire spit is moored in a position with cap Brûlé bearing N.E.  $\frac{1}{2}$  E., distant  $2\frac{8}{10}$  miles.

A black can buoy, No. 121B, marking the southern side of the approach to Orleans channel, is moored off Traverse spit, with cap Brûlé bearing N.E.  $\frac{3}{4}$  E., distant  $4\frac{4}{10}$  miles.

Continuing to the westward along the north shore of Orleans channel, the village of St. Joachim, with a church and spire, is situated about  $1\frac{1}{4}$  miles west of pointe aux Prêtres. Dwellings are practically continuous from here to Quebec. Ste. Anne river is midway between St. Joachim village and Ste. Anne de Beaupré.

**Buoys.**—The northern side of the bank which lies to the south of the channel abreast of Ste. Anne river, is marked by black can buoys Nos. 123B and 125B, moored near the east and west ends of the bank and just south of the leading line of Ste. Anne de Beaupré lights.

**Ste. Anne de Beaupré**, about 18 miles by electric railway from Quebec, has a shrine celebrated in the annals of the Roman Catholic church. It is visited annually by many thousands who come by organized pilgrimages from considerable distances. The church is conspicuous and has two spires.

**Government wharf.**—A wharf, 1,872 feet in length, with a depth of 5 feet at its outer end at low water, extends from the shore at Ste. Anne to the edge of the drying flats. It is provided with a movable slip.



**Wharf.**—There is a small wharf on the west side at the entrance to Ste. Anne river, used by light craft only.

**Leading lights.**—Front light (*Lat.*  $47^{\circ}-01'-13''$  N., *Long.*  $70^{\circ}-55'-43''$  W.).—From a white, square, wooden building, 32 feet high from base to vane with sloping sides, surmounted by a red-roofed lantern, and situated 986 feet from the outer end of the wharf, is exhibited, at a height of 33 feet above high water, a *fixed white* light, which should be visible for a distance of 11 miles. Back light.—Situated W.  $\frac{1}{4}$  N., 4,210 feet from the above front light, is a similar tower, which exhibits, at a height of 107 feet above high water, a *fixed white* light, which should be visible for a distance of 16 miles.

These lights in line, bearing W.  $\frac{1}{4}$  N., lead through the channel from the Domaine leading line, past the entrance of Ste. Anne river, to close north of black buoy No. 125B.

Château Richer and L'Ange Gardien are parish churches, 5 and  $9\frac{1}{2}$  miles westward from Ste. Anne de Beaupré.

Abreast of Château Richer, Orleans channel is most intricate, the extensive drying flats on both sides and les Islets bank in the middle reducing the navigable channel to a width of a little over one cable.

**Buoys.**—The channel southeast of les Islets bank (batture des Islets) is marked by several buoys.

No. 126B, red conical, marks the eastern extreme of the bank.

Nos. 128B, 130B, 132B and 134B, all red conical, mark the north side of the channel.

Black can buoy, No. 127B, is moored on the northwestern edge of the shoal extending off Orléans island between Ste. Famille and point St. Pierre.

**Leading lights.**—**L'Ange Gardien.**—About  $1\frac{1}{2}$  miles west of L'Ange Gardien church a pair of range lights is established. The front light is on the beach, S.W. by W.  $\frac{3}{4}$  W., distant  $1\frac{1}{2}$  miles from the church. The building is square, 23 feet high, painted white with a red roof, and from this is exhibited, at a height of 20 feet above high water, a *fixed white* light, which should be visible in clear weather from a distance of 4 miles. Back light.—From a similar building 21 feet high, situated on



the hillside, 1,387 feet N.E.  $\frac{1}{4}$  N. from the front light, is exhibited, at 33 feet above high water, a *fixed white* light, which should be visible 4 miles.

These lights in line, leads out of Orleans channel to the ship channel south of Orleans island.

Nearly 3 miles west of L'Ange Gardien is Montmorency river with Montmorency falls. These falls, back about half a mile from the mouth of the river, are about 250 feet high, and discharge a great volume of water. A large power generating station is situated here. The falls are not visible from the eastward until the mouth of the river is opened.

Between Montmorency river and Beauport, drying flats extend to a distance of nearly a mile from the shore.

**Buoys.**—A red conical buoy, No. 136B, is moored off the southeastern edge of the above flats in a position with Ste. Pétronille spire bearing South, distant  $9\frac{1}{2}$  cables. This buoy is just west of the line of L'Ange Gardien lights.

A black can buoy, No. 133B, is moored in 3 fathoms of water off the edge of the bank extending from pointe au Pavillon, Orleans island. From this buoy L'Ange Gardien church bears N.E.  $\frac{1}{2}$  E. distant  $1\frac{7}{10}$  miles.

A black can buoy, No. 135B, is moored off the northwestern edge of the boulders stretching westward from pointe au Pavillon. This buoy is placed just east of the line of L'Ange Gardien lights in a position with Ste. Pétronille spire bearing S.S. W.  $\frac{1}{4}$  W., distant  $1\frac{9}{10}$  miles.

**ORLEANS ISLAND, north side.**—Pointe Argentenaye is the eastern extreme of Orleans island. A second point lies about W.N.W. nearly 2 miles from pointe Argentenaye, a shallow bight lying between these two points. Orleans bank extends to a distance of nearly a mile off the two points.

**Leading lights.**—**Domaine range.**—The front light on this range is situated W.  $\frac{1}{4}$  N., distant  $1\frac{1}{2}$  miles from pointe Argentenaye. The building is square, painted white with the roof of the lantern painted red. It is 32 feet high, and from it is exhibited, at a height of 38 feet above high water, a *fixed white* light, which should be visible in clear weather from a distance of



11 miles. The back light tower is a similar structure, situated W.S.W., distant 2,573 feet from the front light. It exhibits, at a height of 122 feet above high water, a *fixed white* light, which should be visible 17 miles.

These lights in line lead from Brûlé light range to Ste. Anne de Beaupré range, passing close southeast of Séminaire spit and well northwest of Traverse spit buoy, No. 121B.

There are no conspicuous features of the coast until Ste. Famille, where a village is grouped about a church. The drying flats extend a considerable distance from the shore.

**Government wharf.**—A wharf at St. Famille, 1,033 feet long, dries at low water and is provided with a slip.

**Wharf.**—Abreast the church, a wharf, in fair condition (1924) extends 200 yards from shore; however, at low tide, the drying bank extends 150 yards farther out.

**Leading lights.**—**Ste. Famille.**—The front light of this range is situated on the beach, W.S.W., distant  $8\frac{1}{2}$  cables from the church. The building is a galvanized, square, steel skeleton tower, the upper part being enclosed and painted white and the lantern having a red roof. This tower is 82 feet high and exhibits, at a height of 81 feet above high water, a *fixed white* light, which should be visible 10 miles in clear weather. The back light tower is situated E. by N.  $\frac{1}{2}$  N., 1,959 feet from the front light. It is 21 feet high, square, painted white with red roof, and exhibits, at a height of 213 feet above high water, a *fixed white* light, which should be visible for a distance of 10 miles in clear weather.

These two lights in line, lead from the intersection of St. Pierre range southwest of batture des Islets, to near black can buoy No. 133B, when the back light should be slightly opened northward of the front light, to clear the shoal off pointe au Pavillon, until l'Ange Garçon lights are in line.

**St. Pierre point** is the next definite point west of Ste. Famille. The bight between these two points is fringed by the widest part of the drying flats, with batture des Islets lying in mid stream.



**Leading lights.—St. Pierre point.**—A short range of lights is established here to lead, bearing S.W. by W., from mid-channel about one mile below the eastern end of batture des Islets to the intersection of the Ste. Famille range, southwest of the batture. The front light, (*Lat.*  $46^{\circ} 55' 34''$  N., *Long.*  $71^{\circ} 02' 31''$  W.), is on the beach S.W. by W.  $\frac{3}{4}$  W., distant  $4\frac{3}{10}$  miles from Ste. Famille church. The building is white, square, with a red roof. It is 21 feet high and exhibits, at 22 feet above high water, a *fixed white* light, which should be visible for a distance of 7 miles. The back light is shown from a red square skeleton tower, 64 feet high. The upper part is enclosed and painted white, with roof of lantern red. It exhibits, at 62 feet above high water, a *fixed white* light, which should be visible 7 miles in clear weather.

**Pointe au Pavillon** is a rounded point backed by low earth cliffs,  $2\frac{3}{4}$  miles from the west end of Orleans island, and West point is the extreme west end of the island. The parish church, Ste. Pétronille, with a spire dominates the point.

Between pointe au Pavillon and West point, flats of mud and boulders extend off the shore more than half way across to the mainland, and at extreme low water the stream between these flats and those off Montmorency river is little more than a cable in width.

**Directions.**—From about a quarter of a mile off cap Brûlé steer about S.W. until Domaine range lighthouses are in line bearing W.S.W., when steer on this leading line, passing Séminaire spit red buoy No. 120B, to Traverse spit black buoy No. 121B, where the alignment of Ste. Anne de Beaupré lights, bearing W.  $\frac{1}{4}$  N., is picked up and followed, passing black buoy No. 123B.

When abreast No. 125B black buoy, Chateau Richer church is in line with the northern fall of the hills over l'Ange Gardien, bearing W. by S.  $\frac{1}{4}$  S.; keep this mark on till Parliament buildings tower at Quebec is in line with the apparent north-western extreme of Orleans island, bearing S.W. by W.  $\frac{1}{2}$  W. This line leads in mid-channel past red buoy No. 126B and between the shoals until St. Pierre lighthouses are in line, bearing



S.W. by W., when steer with them in line, leaving buoy No. 127B on the port and Nos. 128B, 130B and 132B on the starboard hand, until Ste. Famille lighthouses are in line, bearing E. by N.  $\frac{1}{2}$  N. Keep these lighthouses in line astern, passing red buoy No. 134B, until abreast black buoy No. 133B, when the back light should be slightly opened to northward of the front light until l'Ange Gardien lights are in line bearing N.E.  $\frac{1}{4}$  N.

Or, with the Ste. Famille lighthouses in line astern when l'Ange Gardien church bears N.  $\frac{3}{4}$  W., Beauport church spire should be midway between the extremes of two westernmost of Hall's wharves, bearing W. by S.  $\frac{1}{4}$  S., which line leads in mid-channel to the intersection of the l'Ange Gardien lights.

Keep l'Ange Gardien lights in line astern, passing black buoy No. 135B and red buoy No. 136B until in Quebec harbour.

**Tides and tidal streams.**—It is high water, full and change, at Ste. Anne de Beaupré at 6h. 2m.; springs rise  $17\frac{1}{2}$  feet, neaps  $12\frac{3}{4}$  feet; neaps range  $9\frac{1}{2}$  feet; the flood stream begins 4h. 10m. before high water on the shore, and it runs 5h. 10m.; the ebb stream begins 1h. 0m. after high water on the shore, and it runs 7h. 15m. The tidal streams run generally in the line of the channel, and attain a rate of 3 to 4 knots at springs.

**QUEBEC**, the capital of the province of that name, had, in 1921, a population of 95,193. The city consists of Upper and Lower town, the former being beautifully situated upon the ridge dividing the rivers St. Lawrence and St. Charles. Lower town, as its name indicates, is built on the low land northeast and northwest of Upper town, and embraces the parishes of St. Roch and St. Sauveur. In Lower town are the chief banks and warehouses. The citadel, 340 feet above high water, occupies the highest part of the city, the other prominent features seen in approaching from the northeast being Laval university, Post Office, Parliament building, Château Frontenac, and St. John church. The Custom house and the Harbour Commissioners building is a stone building with dome and flagstaff situated 100 yards west from Princess Louise tidal basin dock wall.



**LEVIS**, on the southeast side of the harbour, opposite Quebec, had, in 1921 a population of 10,470. Its most prominent buildings are the college, Notre Dame church, and the hospital of St. Joseph de la Délivrance surmounted by a spire and statue. The station of the Canadian National railway (Intercolonial division) is near the Lévis ferry landing, and passengers by this line cross here to and from Quebec. The value of the manufactures in Lévis in 1922 amounted to \$425,854.

The Lévis waterfront is included in the harbour of Quebec.

**Caution.**—Circumstances may arise in which it may be necessary to forbid entry into Quebec harbour. When this is the case, it will be indicated by the exhibition of three *red* balls vertically by *day*, and three *red lights* by *night*. Pilots will be informed of the regulations to be followed.

**Ferry.**—Steamboats ply at frequent intervals between Quebec and Lévis, summer and winter.

**Pilotage**, regulations *see page* xlviii.

**HARBOUR REGULATIONS.**—All steam vessels passing through the harbour on the Quebec side, between Mariners chapel and the entrance to the basin, shall keep at least 100 yards from the fronts of the wharves.

**Speed.**—Between Indian cove and cap Rouge, no ocean steamship shall proceed at a higher rate of speed than 6 knots. No vessel shall anchor within two cables of the wharves, except in cases of emergency, or for the purpose of hauling alongside a wharf.

**A watch** shall be kept on board all vessels from sunset to sunrise. No vessel shall occupy a berth at the breakwater, or in the basins, without permission from the Harbour master. The river front of the breakwater is reserved for incoming passenger steamers.

The use of the steam whistle is forbidden, except for navigation purposes.

(For other regulations, *see* the "By-laws of the Corporation of the Quebec Harbour Commissioners.")



**Consuls or Consular Agents** for the principal maritime nations are stationed at Quebec.

**PRINCESS LOUISE TIDAL BASIN**, on the northeast side of Quebec, has an area of about 20 acres, a quay frontage of 1,100 yards, and the general depth of 26 feet at low water spring tides, the deepest water, 29 feet, being at the *pointe à Carcy* front. The entrance to the tidal basin is 200 feet in width.

**Wet dock.**—The Wet dock, opening from the tidal basin, is an inclosed basin, with a quay frontage of 1,100 yards, and an area of about 40 acres. The general depth is 25 feet; that on the sill of the gates being 28 feet. The width of the entrance from the tidal basin is 66 feet; vessels can enter the Wet dock at each high water, day and night.

**Regulations for entering.**—The entrance gates are usually open an hour before, and kept open until high water. Vessels wishing to enter, or leave the Wet dock, must be ready to do so immediately on the opening of the gates, but may not proceed through until signalled to do so by the Superintendent, and no vessel may enter or leave the Wet dock without the assistance of a tug.

**Breakwater.**—The breakwater on the northeast side of the entrance to the tidal basin has a length of 2,950 feet, with a depth of 40 feet at low water. Immigrants from Europe are disembarked here to undergo Government inspection. *Pointe à Carcy* wharf, on the southwest side of the entrance to the tidal basin, has a river frontage of 580 feet, and a depth of 40 feet at low water.

**Harbour facilities** available at Quebec may be summarized as follows:—

*In wet dock*—6 berths of from 400 to 500 feet in length.

*In tidal harbour*—4 berths of from 400 to 500 feet in length.

*Breakwater*—4 berths of 500 feet in length, or 3 berths of 700 feet in length, or 2 berths of 1,100 feet in length.

*Pointe-à-Carcy wharves*—4 berths, one ocean, two coasting and one bunkering.



*River St. Charles basin*—7 berths of 500 to 600 feet in length.

**Depths at low water.**—*Wet dock* 25 feet; *Tidal harbour* 24 to 29 feet; *Breakwater* over 40 feet; *Pointe-à-Carcy wharves*, opposite shed 21, ocean berth, over 40 feet; *river St. Charles basin* 35 feet.

**Grain elevator.**—There is a fireproof concrete grain elevator, with a capacity of 2,000,000 bushels, with marine tower, conveyors and grain galleries. The loading capacity is 60,000 bushels per hour. It has also a grain dryer, a "Richardson separator" and bagging shed.

**Facilities and equipment for handling cargoes, etc.,** include four locomotives for switching cars; railway tracks to all ship's berths and sheds; one 50 ton floating crane; cars and scows for removing ships' ballast; five locomotive cranes with capacities up to 38 tons; city water; electric light and power installations.

**Grain cargoes.**—Loading capacity, 160,000 bushels per day. Unloading from vessels 240,000 bushels per day. Unloading from cars, 100 cars per day. Drying grain, 3,000 bushels per day. Cleaning grain, 40,000 bushels per day.

**Railway facilities.**—The docks are accessible to all railways, the Quebec terminals of both the Canadian National and Canadian Pacific railways being situated right within the harbour. The Quebec Harbour Commissioners have 16 miles of tracks laid on the docks for the handling of freight, the shunting being done by the Commission's locomotives.

### Landing Sheds

No.	Location	Size.	Area.
		feet	sq. feet
14	Crosswall.....	200 x 38	7,600
18	Breakwater.....	744 x 37½	28,275
19	Pte-à-Carcy.....	450½x 80½	36,103
20	Montcalm.....	800 x 111	79,600
21	Pte-à-Carcy.....	383 x 80	26,000
22	Louise Embankment.....	200 x 60	11,400
25	Pier No. 1.....	557½x 80	43,000
26	Pier No. 1.....	737½x 80	59,040
27	Pier No. 1.....	955 x 80	77,280
28	Bulkhead.....	776 x 75	58,200
29	Bulkhead.....	1,000 x 102	102,000



**Graving docks and repairs.**—The Lévis dry docks, belonging to the Government, are situated on the south shore close west of Indian cove. The “Lorne” dock has an available length of 624 feet; floor width of  $73\frac{1}{2}$  feet; entrance breadth at high water  $61\frac{1}{2}$  feet; and depth on sill at high water  $25\frac{3}{4}$  feet.

The “Champlain” dock, with an inner and outer basin and total available length of  $1,179\frac{1}{2}$  feet, which can be used as one large dock capable of accommodating the largest vessel afloat, has a floor width of 105 feet; entrance breadth at high water 120 feet; and depth on the sill at high water, 40 feet. The available length of the outer basin is  $508\frac{3}{4}$  feet and of the inner  $643\frac{3}{4}$  feet.

To find the depth of water on the sills at any time, for the “Lorne” dock add 7.7 feet, and for the “Champlain” dock, 22.7 feet to the height of high water as given in the tide tables for Quebec.

In connection with the docks are workshops capable of executing the most necessary repairs.

**Davie’s floating dock** at Lévis is 180 feet long, the breadth of the entrance being 39 feet, and takes a vessel drawing 13 feet; its lifting power is about 1,600 tons.

**Davie’s patent slip** is 500 yards northeast of the ferry landing stage. The cradle is 120 feet long, and can accommodate a vessel drawing 10 feet.

**Québec and Lévis Ferry Company floating dock** is situated also at Lévis, and half a mile southwest of the ferry landing stage. It is 225 feet long over all,  $41\frac{1}{2}$  feet broad in entrance, and takes a vessel drawing 16 feet; its lifting power is over 2,000 tons.

**Quebec and Lévis Ferry Company floating dock** is situ-length, is situated close to the floating dock belonging to the same company.

**Tugs** can be hired at Quebec, arrangements being made beforehand by telegraph. There are two powerful tugs, the *Lord Strathcona* and the *Gopher*. The former is owned by the Quebec



Salvage and Wrecking Company, Limited, and the latter by the Canadian Pacific Company Limited. These two boats are available by giving four hours notice.

**Supplies** of all kinds can be obtained in Quebec.

**Water** from the water works is laid on the wharves and can be purchased at a small charge.

**Coal.**—Coal companies have five towers for discharging and loading coal. Bunkering is done from barges and coal cars brought alongside the vessel.

**Fuel oil bunkering.**—The Harbour Commission has a fuel oil pipe line running from a tank on Louise docks to berths Nos. 18, 25 and 26 at breakwater, and to berths Nos. 27, 28 and 29 on St. Charles river front.

**Seamen's Institute.**—There is a Seamen's Institute in Quebec, and sick seamen are cared for at the Jeffrey Hale hospital, and the Hôtel-Dieu. Seamen are shipped under the direction of the agent of the Department of Marine and Fisheries.

**Holidays.**—The public holidays in the province of Quebec are: January 1st and 6th, Ash Wednesday, Annunciation (25th March), Good Friday, Easter Monday, Ascension day, Victoria day (24th May), Corpus Christi, Dominion day (1st July), Labour day, All Saints day, Immaculate Conception (8th December), and Christmas day.

**Time signal.**—A time signal is made from a mast 354 feet above high water on the Cavalier building at the Citadel, daily, except on Sundays; a ball is hoisted half way up, a quarter of an hour before, and, to the masthead, *five minutes* before the signal. The ball is dropped at 1h. 0m. 0s. p.m., eastern, or 75th meridian mean time, equivalent to 6h. 0m. 0s. p.m., mean time at Greenwich. If the signal is inaccurate, the ball is again hoisted half mast, and retained there half an hour. The ball is in latitude 46°48' 31.23" N. and longitude 71°12' 20.70" W. of Greenwich.

Eastern time is used in all places within the limits of this book.



**A reporting station** is established on the roof of the Custom house building. (For particulars, *see p. xliv.*)

**Thick weather.**—Fogs may occur occasionally on river St. Lawrence, in the early part of the day, throughout the season of navigation, but the thickest weather and most continuous, is usually experienced in September and first half of October. (*See p. lii.*)

**Wireless telegraph station.**—A wireless telegraph station is established at Quebec, the mast being erected on the citadel, in latitude  $46^{\circ} 48' 21''$  N. and longitude  $71^{\circ} 12' 29''$  W. The call letters are VCC, wave length 600 metres, and range 350 nautical miles. (For particulars, *see p. xxxviii.*)

**Communication by water.**—South shore.—A steamer of the Clarke Steamship Company, Limited, runs fortnightly to Summerside, Charlottetown and the principal ports on the way. North shore.—Two steamers of the above company under mail contract with the Government, leave Quebec weekly for Natasquan, calling at all the ports on the coast from Franklin eastward. One of these above mentioned steamers leaves Quebec fortnightly for Harrington and Bradore bay.

Vessels of the Canada Steamship Lines, during July and August, leave daily for Murray bay, Tadoussac and Chicoutimi, calling at a number of intermediate points; up to the middle of June and after the month of September the same vessels leave but twice a week. Steamers of the same line run daily between Quebec and Montreal, calling at Batiscan, Three Rivers and Sorel.

Steamers of the Quebec and Lévis Ferry Company run several times a day to Sillery, New Liverpool and Ste. Pétronille of Orleans island. A steamer of the Compagnie Maritime et Industrielle runs daily to St. Jean of Orleans and to St. Michel and Berthier on the south shore. A steamer runs twice a week to pointe Platon, Lotbinière, Ste. Emmélie and Deschaillons on the south, and to cap Santé village, Deschambault and Grondines on the north shore above Quebec.



**Railways.**—Quebec has connection with the Maritime provinces by two divisions of the Canadian National railway. One of these, the main line, follows the southern shore of the St. Lawrence, with termini at Halifax, St. John and the Sydneys, while the other runs through that part of Quebec province lying south of the St. Lawrence and through the interior of New Brunswick to Fredericton and St. John. The Canadian National system also has two lines running to Montreal, the one following the southern and the other the northern bank of the river. Other divisions operated from Quebec by the Canadian National railway are: the air line via Hervey Junction to Winnipeg; the line to Portland, Maine, via Sherbrooke and Lennoxville; the line running through the Laurentide National Park to points on lake St. John and a line following the north shore of the St. Lawrence to Murray bay. Lines of the Canadian National railway running from Quebec to the Maritime provinces, to Montreal along the southern shore, and to Portland, cross the St. Lawrence over the Quebec bridge.

The Canadian Pacific railway runs from Quebec to Montreal, through Batiscan, Three Rivers and the principal villages near the north shore of the St. Lawrence. Connection may also be had with Halifax, St. John, Portland, Boston and New York by the Quebec Central railway.

**Exports and imports.**—For the fiscal year ending March 31, 1922, the value of the exports, consisting principally of lumber, square timber, wood pulp and pulp wood, aluminum and codfish, amounted to \$15,382,000. That of the imports, comprising chiefly cotton, woollen, iron and steel manufactures, undressed furs, raw hides, explosives and furniture, amounted to \$14,332,000.

**Shipping.**—For the fiscal year ending March 31, 1923, there were entered at the port of Quebec the following number of vessels and tonnages,—British steamers arriving from sea, 216, with a tonnage of 1,403,711; foreign steamers from sea, 25, with a tonnage of 61,755; British sailing vessels from sea, 2, with a tonnage of 615. In the coasting trade there arrived 1,052 British steamers, with a tonnage of 975,190; 20 foreign steamers with a tonnage of 45,550; and 638 British sailing vessels with a tonnage of 74,745; and 20 foreign sailing vessels with a tonnage of 1,981.



From the upper lakes and river ports there arrived in the same year, 14 British (Canadian registry) steam vessels, with a tonnage of 12,714; three United States steamers with a tonnage of 4,128; and 189 vessels other than steamers, mainly United States tow barges with a tonnage of 19,800 tons.

**Manufactures.**—The value of the manufactures in Quebec in 1922 amounted to 31,019,782.

**Tides and tidal streams.**—*See pages 215 to 217.*







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